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The Royal Road

BUT three months ago, King Edward VIII, speaking as Prince of Wales at the Centenary Banquet of the G.W.R., honoured that railway with the title "The Royal Road," and the unexpected additional significance of this description was in our mind on Tuesday when we stood by the solemn procession escorting King George V on his last journey. When William IV died (on June 20, 1837), railways were in their infancy, and neither Paddington nor even the first section of the G.W.R. was built, but since then it has been the privilege of the company to convey every British sovereign for the last time. It was on Monday, June 13, 1842, that Queen Victoria made her first railway trip, travelling from Slough to Paddington, and on February 2, 1901, the Queen's body traversed this same road, but in the reverse direction, in the funeral train headed by the single-driver locomotive *Royal Sovereign*. This was the first occasion on which the dead body of a British monarch was borne on the way to its last resting place by railway. The funeral of her son, King Edward VII, followed the same route on Friday, May 20, 1910, and the train was then headed by the 4-6-0 engine *King Edward*. On Tuesday last the locomotive *Windsor Castle* was selected, and this had the added distinction of having been driven by the dead sovereign himself at Swindon on April 28, 1924. No other London station lends itself so well as Paddington to dignified handling of a large procession, and this is in large measure a tribute to the genius and vision of Brunel, for the generous layout which he planned when the station was built in 1854 has remained unchanged in its essentials ever since. This was exemplified in a striking way on Tuesday, when the troops preceding the gun carriage were enabled to manœuvre without difficulty in the cab-rank space between platforms 8 and 9, and to depart rapidly via the cab approach ramp at the west end of this space. Perhaps the most striking operating feature of the morning was the silence from an early hour. In accordance with British custom, the ordinary work of the day was carried on and only some five down passenger trains were cancelled. Arrivals and departures were conducted without fuss and almost noiselessly in such a way as to suggest even a lack of formality, but without impairing the solemn dignity of an impressive and moving scene.

* * * *

The Week's Traffics

Except in the coal class, where receipts are again uniformly up, there is considerable variation in the traffic movements of the four group companies for the past week. Passenger train earnings show a net increase of £6,000, but in merchandise takings there is a net fall of £18,500. The coal increase of £43,500 enables the net advance of the four companies for the week to be £31,000. For the four weeks to date the four companies together show an increase of £36,000 in passenger train traffics; merchandise receipts are up £42,000; and coal class earnings show an advance of £223,000.

	4th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 3,000	− 2,000	+ 15,000	+ 16,000	+ 142,000	+ 3·40
L.N.E.R. ..	− 3,000	− 16,000	+ 16,000	− 3,000	+ 98,000	+ 3·14
G.W.R... ..	—	+ 3,000	+ 11,000	+ 14,000	+ 44,000	+ 2·50
S.R.	+ 6,000	− 3,500	+ 1,500	+ 4,000	+ 16,000	+ 1·22

London Transport receipts for the past week were £531,600, an increase of £17,200, and bring the total earnings for the 30 weeks up to £16,322,400, an improvement of £257,800. The Great Northern Railway (Ireland) has an increase of £1,800 up to January 24 of this year.

* * * *

London Transport and the Royal Funeral

Both the lying-in-state at Westminster Hall and the funeral procession of the late King involved the London Passenger Transport Board in the handling of enormous and in some ways unprecedented traffics. For the benefit of those who attended Westminster Hall on the night of Sunday-Monday, trains were kept running on the Piccadilly Line from Hyde Park to Arnos Grove; on the Morden-Edgware Line from Kennington to Colindale; and on the District Line from Charing Cross to Ealing; until approximately 4 a.m. Certain bus services on routes not covered by these railways were kept running until the same hour. Corresponding facilities were afforded on the following night. On Tuesday last the Underground railways carried some two million passengers to and from the Royal Funeral, or approximately the same number as on Silver Jubilee day last year, but with the difference that the funeral traffic was all carried to a highly concentrated area before noon, whereas the Jubilee traffic was staggered over nineteen hours, and was dispersed throughout the City and West End. For six hours trains passed Charing Cross (on the three railways) at the rate of 206 an hour, totalling 8,316 cars. The average hourly density on the Underground lines on an ordinary working day is 56,000 passengers; on Tuesday the density rose to 160,000. Incidentally, three times the number of electric units were consumed as compared with the funeral of King Edward VII. The intensity of the Tuesday morning rush necessitated closing certain stations, chiefly on the Piccadilly line, such as Hyde Park Corner at 8.30; Green Park at 9.0; and Marble Arch at 9.30.

The Retirement of Mr. C. M. Jacobs

The retirement tomorrow, February 1, after 54 years' service, of Mr. C. M. Jacobs, Signal Engineer, Great Western Railway, is an event that inspires amplification of our brief biography on page 216 of this issue. Mr. Jacobs has two qualifications that stand out pre-eminently: He has been a good workman, especially on the electrical side of railway signalling, and he has been a good companion. As to the former, we would mention the introduction over 30 years ago of the key occupation system, which rendered unnecessary the provision of flagmen for the protection of men working on single lines. In the development of the Great Western system of automatic train control, Mr. Jacobs was responsible for the electrical equipment, as he was also for the extension of the key occupation system into the key token for the control of single lines, another standard equipment on the G.W.R. Among other notable tasks Mr. Jacobs has tackled may be mentioned power signalling at Paddington, Cardiff, and Bristol. Whilst it is easy to quote these and similar examples of Mr. Jacobs' work as a signal engineer, we find it difficult to convey to those who did not know him personally the excellent reasons underlying his popularity with all those who came in contact with him. Railway circles will regret his retirement, but will hope to have for many years the opportunity of periodically renewing their acquaintance with so individual and cheerful a personality.

* * * *

Overseas Railway Traffics

Brazilian railways continue to show increases in currency, but the low rate of the milreis on the free market exchange on which their earnings in sterling are based, for the most part neutralises the benefit of better traffics. For the past week the milreis averaged only 2·77d. against 3·19d. for the corresponding week of last year, and for the four weeks of the current year the Great Western with an increase of 332 contos has a decrease of £3,900 in sterling, and the Leopoldina with an increase of 935,000 milreis secures an advance of only £98 in sterling. At the end of the third week the San Paulo had done better with a sterling advance of £14,307. Amongst Argentine railways the Buenos Ayres & Pacific has been the most successful during the past fortnight in adding £31,237 to its previous increase, and the Central Argentine comes next with a net advance of £10,523.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	30th	92,891	+ 14,610	2,299,103	+ 223,229
Buenos Ayres Great Southern ..	30th	151,704	— 35,171	3,684,449	— 173,279
Buenos Ayres Western	30th	50,646	+ 1,205	1,267,482	+ 6,741
Central Argentine	30th	136,566	— 241	3,578,556	+ 90,110
Canadian Pacific	3rd	433,600	+ 42,600	1,244,200	+ 97,000
Bombay, Baroda & Central India	42nd	249,150	— 24,750	6,464,700	— 57,000

The Canadian Pacific has during the past two weeks added £63,200 to its previous increase.

* * * *

Golden Jubilee of the Indian N.W.R.

Another railway jubilee is being celebrated this month, the North Western system of India having been formed in January, 1886, by the amalgamation of the Scinde Punjab & Delhi Railway with the Punjab Northern State, the Kandahar State, the Sind Sagar and the Indus Valley Railways. Its subsequent growth was remarkable and culminated in the final pre-depression spurt of 1926-29, when the annual added mileage of new line reached the record figure of 300 miles. The latest figure of aggregate route mileage open is 7,088 miles, or nearly twice that of any other Indian railway: its size places it among the great railway administrations of the world. Actually the Karachi-Kotri section, the first of its components to be completed, was opened for traffic in 1861 and the Lahore-Amritsar section a year later. The North Western Railway staff magazine—which again has a very striking cover, illustrative of an XC Pacific hauling an express or mail train—describes briefly the history of the system textually and pictorially, the latter including illustrations of very early locomotives and new ones, of the Lansdowne cantilever bridge at Sukkur—illustrated in our issue of May 31 last—and of the Attock bridge, both under construction, of the Khojak, the longest tunnel in India, and of one of the new and very powerful diesel-electric locomotives. Another interesting illustration shows a broad gauge wagon being carried over the Khojak pass on a rope-incline track prior to the opening of the tunnel, which is practically on the Afghan frontier.

* * * *

William Barclay Peat

In pre-grouping days the name of Sir William Barclay Peat was among the best known of the eminent chartered accountants responsible for auditing the accounts of the many railways then existing, and his death on Friday last at the age of 84 will be regretted not least by his many friends in railway circles. He was born in Kincardineshire in 1852, and in 1877 was admitted a partner in the firm of Robert Fletcher & Company, chartered accountants of London and Middlesbrough. On his becoming the senior partner, the name of the firm was altered to W. B. Peat & Company, and as such acted as accountant to many railways, including the Great Eastern, London & South Western, North Eastern, Metropolitan District, Midland & South Western Junction, Belfast & County Down, London, Chatham & Dover, and the South Eastern & Chatham Railway Companies' Managing Committee. Sir William was always jealous for the welfare and prestige of his profession, and in 1906-7, and 1907-8, served as President of the Institute of Chartered Accountants. He was a pioneer in widening the scope of accountancy to include business reorganisation, and played a prominent part in the immediate post-war period of reconstruction. Sir William retired in 1923 from the senior partnership of his firm, which is now known as Peat, Marwick, Mitchell & Company, but this did not involve retirement from business life, for up to the time of his death he held office on various committees, and banking and other directorships, including the chairmanship of Robert Stephenson & Co. Ltd.

* * * *

French State Railways Punctuality

Statistics of punctuality published by the Ministry of Public Works for September, 1935, show a noteworthy pre-eminence in this respect of the State Railways compared with other French systems. Of all express services on the Etat, 22·52 per cent. arrived between 1 and 15 min. late. The closest approach to this standard elsewhere in France was 25·86 per cent., while the poorest record shown was 48·25 per cent. The system responsible for the latter figure also had the highest percentage (14·85) of express arrivals over 15 min. late, and here, too, the State Railways showed the best result with only 1·25 per cent. The next best figure was 3·01 per cent. The State Railways maintained their lead (although with a narrower margin) in slow train services, for which 11·85 per cent. of the arrivals were between 1 min. and 15 min. late, comparing with the next best result of 11·96 per cent., and with a maximum figure of 34·96 per cent. Slow train arrivals over 15 min. late were 0·75 per cent. of the whole on the State Railways, 0·79 per cent. on their nearest competitors, and 5·45 per cent. on the system with the least satisfactory record in this respect.

Football Forecasts

Once again the Commercial Manager's department of the L.M.S.R. has shown unusual enterprise in its search for traffic. Emulating, and indeed, as it turned out, overshadowing the notoriously inefficient prophets of the sporting press, the railway company proffered its own forecast of the cup-tie match played last Saturday between Stoke City and Manchester United. So sure was the L.M.S.R. of the infallibility of its occult powers that it distributed leaflets to those entering the Stoke ground before the match giving particulars of special cheap fares that would be available to Manchester in the event of the match resulting in a draw. Needless to say the match was drawn, each side scoring a single goal. By now the railway will have reaped the harvest of its enterprise, and no doubt its canvassers are already to be found lurking round the players' training quarters waiting to get the "low down" on the chances for the next round. The only thing to be regretted from the railway point of view is that every match cannot result in a draw, for then there would be no ending to football excursion traffic.

* * * *

"Why Waterloo Trains are Running Late"

Under the persuasive advocacy of Mr. E. P. Leigh-Bennett, the Southern Railway has made a frank statement to regular travellers in its first class season ticket holders' review, *Over the Points*, of its case in reply to current charges of late running by electric services at Waterloo. The same apology has been distributed in pamphlet form to holders of third class seasons and ordinary tickets at most suburban stations on the lines affected. While admitting the justice of the criticism, the article makes it clear that any temporary inconvenience will not only be far outweighed by the advantages when the work causing the present delays is completed, but is far less than what might be expected with the progressive increase in traffic were such steps not to be taken. There are now 1,242 trains into and out of Waterloo daily, two hundred more than ten years ago, but they are still worked over the same layout, whereby all up stopping trains have to cross the up and down steam and fast electric lines before entering the terminus. A flyover at Wimbledon to obviate this inconvenience is part of the £500,000 improvement scheme referred to in THE RAILWAY GAZETTE of September 7, 1934, and it is the construction thereof (illustrated on p. 213 this week) that imposes a speed restriction causing late arrivals, delayed departures, and thus what Mr. Leigh-Bennett describes as a "sinister snowball," growing in size as the day advances. The approach layout to Waterloo, of which a view near Clapham Junction is also reproduced on p. 213, will be modified to increase the platforms available for main-line trains from ten to sixteen, so minimising the crossing of paths now necessary.

* * * *

Speed and Punctuality

The review of British railway speed during 1935, which appears on page 218 of this issue, reveals a substantial increase in the aggregate mileage of journeys performed daily at speeds of 58 m.p.h. and upwards from start-to-stop, as compared with 1934, the total figure having risen from 5,537 to 7,805 miles, and the number of runs from 72 to 94. On the Great Western and London & North Eastern Railways much of the increase is made up of new high speed mileage; the London Midland & Scottish increase, on the other hand, consists chiefly of runs which have been very slightly expedited, but sufficiently to bring them within the range of speed indicated. From our observations, the speeding-up of some of the short runs of the last-mentioned company—such as the 30·2 miles from Luton to St. Pancras, now booked to be covered in 30 min., has turned out to be a counsel of perfection seldom achieved in practice. With the necessarily slow approach to the terminus, timekeeping is well-nigh impossible if the start from Luton is late, or any permanent way or signal checks are encountered on the way. The shorter the distance scheduled at high speed, so much reduced is the opportunity for picking up any arrears of time. As regards the longer high speed journeys, however, there is no question that they are amply within the powers of modern British locomotives, and that there is still scope for improvement, particularly in secondary main line services.

* * * *

Colour-light Signals in Belsize Tunnels

A very interesting signalling installation is to be taken in hand. As announced on page 168 last week, automatic colour-light signals of the multiple-aspect type are to be provided between Carlton Road Junction and Finchley Road on the former Midland Railway. This is of interest in that the area includes the two parallel Belsize tunnels, a total distance of 1 m. 42 ch. The Belsize Second tunnel —the southernmost of the two—is 1 m. 62 yd. long; according to the report of a collision between two goods trains at Finchley Road on June 16, 1917, the Belsize First, and older, tunnel is 1,697 yd. long. Between Carlton Road Junction and Belsize tunnels there is Haverstock Hill station signal box, 26 ch. west of the western portal of the tunnels, and there is no other box thence to Finchley Road. The introduction of the automatic signals, together with the use of the double yellow—as implied by the fact that multiple-aspect type signals are to be installed—will increase the number of block sections, whilst the longer range of light of these signals improves the driver's view when there is smoke and steam in the tunnels. The working of main line trains to and from the North, and of those in the London suburban area, will be accelerated.

* * * *

German Streamlined Double-Deck Trains

An interesting example of the present tendency in Germany to carry streamlining as far as possible in the design and equipment of passenger trains of various kinds is afforded by the reversible or push-pull trains now in course of construction for service on the Lübeck-Büchen Railway. It is expected that these articulated units will be completed and ready for service within the next two or three months. Each train consists of a streamlined 2-4-2 tank engine and an articulated streamlined coach of the double-deck pattern, thus combining the advantages of rail motor trains, *i.e.*, readiness for service, easy reversibility, and simplicity of working, with greater seating capacity. The trains are designed for a maximum speed of 120 km. (74·6 m.) p.h. in either direction of running. Electrical remote control from a driver's compartment at the leading end is provided for use when the train is running with the locomotive at the rear. The general construction of the new trains, together with the facilities for driving from either end, should enable them to be operated as easily as railcars, with, of course, the advantage of the higher seating capacity. The boiler of the locomotive, although of small overall proportions, is designed to carry a working pressure of 227 lb. per sq. in., reflected in a tractive effort amounting to 14,110 lb. A short illustrated description of the new trains will be found on page 212 of this issue.

Rating of Railways—House of Lords Judgment in Relation to the Southern Railway

ON January 24, 1936, the House of Lords gave judgment in the appeal of the Railway Assessment Authority from the finding of the Railway and Canal Commission that the net annual value of the Southern Railway was £1,077,131 and not £2,180,000, the valuation of the Railway Assessment Authority, or £1,838,667, the old assessment and the basis on which rates have been paid since 1930. This reduction means a saving to the company of, approximately, £300,000 per annum in rates and rate relief in respect of the five years from April 1, 1931, to March 31, 1936. The total overpayment is, therefore, £1,500,000 which is recoverable as to 25 per cent. from the local authorities and as to 75 per cent. from the Freight Rebates Fund. The Railway and Canal Commissioners' valuation of the Southern Railway which has been upheld by the House of Lords was arrived at as follows:—

	£	£	£
Average net receipts 1928-1929	..	.. ..	5,408,000
Tenant's capital	27,610,690		
15 per cent. thereon =		4,141,603	
Receipts earned without employment of tenant's rolling stock:—			
(A) Pullman cars	559,048		
(B) Trains of Metropolitan District and London Midland & Scottish to Richmond and Wimbledon ..	91,362		
(C) Owners' wagons estimated at	1,000,000		
(D) "Rents from houses and lands" and "other rents" included in £5,408,000 ..	242,258		
	£1,892,668		
Tenant's share, 10 per cent...	.. ..	189,266	
Occupier's share or non-rateable profits of trade ..	.. ..	———	4,330,869
Net annual value			£1,077,131

This method of valuation which has always been applied to railways and other public utility concerns is known as the "Profits Basis" and was designed to eliminate from the net receipts the profits of trade which are not rateable. The main issue before the Courts was whether the customary method which had regard only to the interest and profit on tenant's capital invested chiefly in rolling stock ought to be continued, or whether in determining the amount of the allowance for interest and profit on the capital value of the rolling stock, &c., regard should be had to the return which the hypothetical landlord would get upon his capital, *i.e.*, the capital invested in the line of railway, stations, &c. The House of Lords has held that the calculation of the rent at which the railway hereditaments might reasonably be expected to let as a whole from year to year is not to be influenced by a consideration of the large amount of capital spent in creating the immovable parts of the undertaking. This decision is of importance to gas, electricity and water undertakings which are also valued on the "profits basis." It is understood there are certain subsidiary questions still outstanding in regard to the Southern Company, for example, the question whether the premises occupied by traders in goods yards are "so let out as to be capable of separate assessment" or should be included in the assessment of the railway undertaking. Subject to such questions it will now be for the Railway Assessment Authority to consider the application to the other railway companies of the principles which have been approved by the House of Lords. The figures of the three other principal companies are as follow:—

Name of company	Average net receipts (1928-29)	Net annual value in draft roll	Aggregate net annual value of comparable existing assessments
	£	£	£
L.M.S.R.	14,237,091	5,000,000	3,629,602
L.N.E.R.	10,904,195	3,500,000	2,591,521
G.W.R.	7,560,000	2,800,000	2,296,197

Of these companies the only one whose roll has been completed by the Railway Assessment Authority is the L.N.E.R. Company and in that case the net annual value has been entered as nil on the ground that that was the effect of the judgment of the Railway and Canal Commission in the Southern case. In this connection attention should be drawn to the statement of the Commissioners that the figures and percentages they had found in the Southern case must not be taken as providing a set of mathematical formulæ to be applied in every case. "Each case must depend upon its own facts." As will be appreciated on a study of the Commissioners' valuation the amount of the net annual value will depend very largely upon the ratio of the tenant's capital to the net receipts and the circumstances of the several companies differ in this regard, but in all of them a substantial reduction of assessment appears to be inevitable with consequential refund of the overpayment of rates during the last five years. Incorrect statements have appeared in regard to the effect of the reduction of railway assessments on the financial position of local authorities and on the working of the machinery designed to benefit certain industries, chiefly coal mining. With regard to local authorities the aggregate rateable value of all freight transport hereditaments in England and Wales, including such undertakings as the Port of London Authority and the Mersey Docks and Harbour Board, is less than 1 per cent. of the total rateable value of the country, so that the matter cannot be serious for the great majority of the authorities.

It must be remembered that by reason of the Local Government Act, 1929, every £100 which the local authorities had previously collected from the railway companies was reduced to £25, the balance of £75 being paid to the local authorities out of National funds. The reduction of the railway assessments affects the £25 but not, so far as the local authorities are concerned, the £75, there being no provision in the Act for varying this payment out of National funds by reason of a change in the railway companies' liabilities on which such payment was originally based. The position of the railway companies in relation to the £75 is, however, less satisfactory than that of the local authorities as will be seen on looking a little further into the scheme of the Local Government, 1929. An outstanding provision of that Act was the total exemption of agricultural land and buildings from rates, farmers continuing liable in respect of their houses only. Industrial hereditaments and freight transport hereditaments were relieved of rates to the extent of three quarters. Industrial hereditaments consist chiefly of mines and factories or workshops. Freight transport hereditaments include railways, canals and docks.

Now the treatment of railways under the Act was in striking contrast to that of the other hereditaments. The owners of the latter were allowed to do what they pleased with the rating relief which was in effect a Government

subsidy and no regard was had to the nature of the product of the factory, or whether or not the industry needed financial assistance. Not so the railways. The companies were required to pay the relief they received into a fund called the " Railway Freight Rebates Fund " which was to be used to provide further subsidies to farmers, colliery owners and the owners of iron and steel works by means of rebates from carriage charges, the amount of the rebates being determined by the Railway Rates Tribunal, but the proportions of the net revenue of the fund attributable to the three groups of selected traffics were fixed by the Act, namely:—Coal, 70 per cent.; Agriculture, 20 per cent.; Iron, &c., 10 per cent.

Had the companies been at liberty to use the rate relief in the best interests of their business they would probably not have adopted the above allocation as they could then have used the money to cover the cost of the reduced rail charges which they were forced to make to retain traffics subject to road competition. The Freight Rebates Fund was established on October 1, 1929, and in the following year Parliament passed the Railways (Valuation for Rating) Act, 1930, the principal effect of which was the valuation of each undertaking as a whole—as had been done in Scotland since 1854—instead of in parochial sections, a change recommended by every responsible body which had considered the subject and one which it was well known was likely to reduce the assessment of the railways. In connection with the Railway Rates Tribunal's review of the operation of the Railway Freight Rebates Scheme in 1931 the Railway Clearing House submitted the following statement on the question of rate relief:—

> The valuation of railway hereditaments for rating to be made under the Railways (Valuation for Rating) Act, 1930, is in course of preparation by the authorities set up by that Act, and when finally determined will be substituted for the values appearing in the valuation lists upon which the rates paid by the railway companies since April 1, 1931, were levied. When this substitution has been made any over-payment or under-payment of rates will become payable to or by the railway companies.
>
> The investigations into the question of the valuations to be fixed under the Act of 1930 are not complete. The companies are unable to say what valuations will be fixed finally, but their investigations have reached a stage which enables their advisers to state that the total rate relief of the railway companies in respect of the year ending September 30, 1932, would not, in their opinion, exceed a sum equal to one-half of the rate relief estimated for the purpose of calculating the rebates now in force and provisionally paid into the fund for the year ended September 30, 1931, and that in their view the rate relief will actually be less than that sum.

In spite of this the contributions to the fund were based on the old assessments which have now been proved by the judgment of the House of Lords to be excessive. There are no means by which the traders who have benefited by the rebates can be asked for repayment, but there does not seem to be any reason why the companies should suffer financially because they have been compelled to contribute to a fund on a wrong basis.

* * * *

Railways and Containers

ONE of the most prominent of the many developments in railway freight traffic conveyance now being advertised jointly by the main line companies is the container system. By this means door-to-door or point-to-point transport is effected between the sender and consignee, with the assistance of what are, in effect, mobile truck bodies, which are interchangeable between rail or road vehicles and can be freely moved by either. Although this method of conveying merchandise was used to some extent before the war, it was not adopted generally by the main line companies until 1926. The idea then immediately appealed to the trading community, and the number of containers had to be increased so rapidly that they now number considerably over 11,000. Experience has shown that this system of transport results in a reduction of package, labour and materials costs, minimised risk of breakage and pilferage, elimination of returned empties, and reliability of delivery. In order to meet the requirements and suggestions of traders, many types of containers have been evolved, of which the most popular is probably the covered type of 4-tons capacity. A smaller container of 2½-tons capacity has proved to be specially suitable for groceries, confectionery, paper, boots and shoes, &c., while insulated containers with side and end doors are in constant demand for loads of frozen and chilled meat, fish, and foodstuffs, up to 4 tons.

For fresh meat traffic, particularly from the West of England and Scotland to London, special containers are available with large ventilators in the sides and air extractors in the roofs for the purpose of maintaining a good circulation of air. A special type has also been constructed for effecting removals of household furniture, sufficiently capacious to carry the furniture and effects of a complete household, or a considerable quantity of new furniture. Other special covered types include the bicycle container capable of holding 70 machines in two tiers, each cycle fitting into felted slots separated by felted cross bars, and a 2½-ton container for conveying grain in bulk in perfect condition. To meet the particular needs of the building trades, small low-sided containers with or without lids, known popularly as " travelling hods," have been designed to carry 1½ to 2½ tons of such traffics as bricks, tiles, slates, &c., and these can frequently be seen in the process of being hoisted to the upper floors of buildings under construction. Large open types have been introduced for the conveyance of such diverse traffics as stoves, grates and ranges, glass bottles, machinery, accummulators, baths and glazed ware. Other types are constantly being evolved to meet the requirements of particular traders.

Foreign Timetables

Mr. John Gibbons, whose name is probably known to many of our readers as an author of travel books, has acquired a varied collection of foreign timetables in the course of his wanderings. In commenting on these, he remarks that the Italian *Orario Generale* strikes him as the most comprehensive, with its times of all rail, road, air and water transport in the country, around its coasts and to overseas destinations. The French traveller has a somewhat similar *vade mecum* in *L'Indicateur Chaix*, although therein only those road services connecting with railways are shown, while air and deep-sea travel are confined to the advertisement pages. Mr. Gibbons has a Portuguese specimen in which is given a complicated table for working out the supplements payable on trains officially described as " express." The basis of this description seems obscure, as our correspondent tells us he has been charged a supplement on a train considerably slower than the one by which he had previously made the same journey at the ordinary fare. Bilingual timetables in his collection come from Finland, Belgium, and (by reason of its English translations of Erse place-names) from Ireland. The Belgian volume ventures in an unusual direction by showing how many ounces of meat the traveller may expect for his money at station buffets.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Stevenson and Watt

7B, Hay Lane, Kingsbury,
London, N.W.9,
January 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Macdonald is quite correct in suggesting that it was Robert Stevenson of Edinburgh (1772-1850) who was consulted by Sir John Sinclair. In David Stevenson's "Life of Robert Stevenson," published by Adam & Charles Black, Edinburgh, in 1878, it is stated, on page 125, that "the Right Honourable Sir John Sinclair, Bart., proposed in 1823 certain queries to Mr. Stevenson relative to a proposal for the construction of an iron railway between the cities of London and Edinburgh . . ." An extract from Stevenson's reply which is given shows that the alternative was canal communication which had been proposed by James Watt. Stevenson strongly favoured a railway and pointed out that when Watt "suggested the idea of a central line of canal many years since, the railway system was then neither so well known, nor so much acted on as now."

Your obedient servant,
REGINALD B. FELLOWS

Summer Locomotive Work in France

Barnet,
January 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—While one has no desire whatever to belittle the remarkable locomotive work which is performed on the Paris-Orleans Railway of France, there are certain statements in the editorial article entitled "Summer Locomotive Work in France," in your January 24 issue, which call for comment. I refer particularly to the assertion that, excepting the Sud Express and trains Nos. 15 and 16 between Paris and Bordeaux, there are steam-hauled trains over this section, averaging 650 tonnes in weight, whose schedules call for speeds of 50 to 60 m.p.h. up 1 in 200 grades, and lighter trains of 400 to 500 tonnes whose schedules require speeds of 65 to 68 m.p.h. up similar inclinations, and, according to the subsequent context, apart from any question of time recovery. Scrutiny of the timetables of this company shows that, excepting the afore-mentioned Sud Express, and also Trains Nos. 15 and 16 (with the through connections of the latter between St. Pierre-des-Corps and Nantes), there is not one single steam-hauled run south of St. Pierre-des-Corps on the Bordeaux main line which is timed as fast as 55 m.p.h. from start-to-stop. Between stops the 8.40 a.m. and 12 noon from Paris (Quai d'Orsay) to Bordeaux, which are generally reckoned as the hardest trains on the service, are timed from station to station mostly at between 49 and 54 m.p.h., start to stop, with a general average of 52 m.p.h. The corresponding up services have easier timings, and the night trains, which normally carry the heaviest loads, much easier timings still. Rapides Nos. 15 and 16, which do not carry third class passengers, have point-to-point timings at between 58 and 61 m.p.h. from start-to-stop, but in view of the class limitation are considerably lighter save between St. Pierre-des-Corps and Paris, where the Nantes portions are attached, and where the haulage is electric. The Sud Express, with the fastest timings, is an even lighter train. In the whole distance between St. Pierre-des-Corps and Bordeaux, 216·7 miles, roughly 50 miles are inclined at 1 in 200 or thereabouts, mostly in short strips and nowhere steeper than 1 in 192; and if this distance be halved, it means that the engines have to face only 25 miles in all at this inclination in over 200 miles of travel in either direction. To say that such timings as those I have cited "call for the maintenance of 50-60 m.p.h. up 1 in 200 grades, and for certain lighter trains weighing 400-500 tonnes, 65-68 m.p.h." seems in the circumstances an exaggeration; even the 70·4 m.p.h. schedule of the Silver Jubilee of the L.N.E.R. normally requires no more than 70 m.p.h. speeds up the ruling 1 in 200 gradient of the L.N.E.R. main line. French locomotive enthusiasts, one suspects from their writings in *Transports* and elsewhere, are somewhat given to representing extreme running conditions as normal, and though, on the basis of test performances, one would not venture to doubt the ability of the rebuilt Paris-Orleans Pacifics to perform such feats as these, the schedules most certainly do not call for them. The one cause of delay not mentioned in your article, incidentally, is that arising from permanent way relaying checks, but as the claim to which I have referred excluded the recovery of lost time, this omission does not affect the argument.

CECIL J. ALLEN

[We are obliged to Mr. Allen for drawing attention to this matter, for others may have been misled by our use of the word "schedules," and its subsequent context. What we meant to convey was that these engines do maintain very high speeds up the 1 in 200 gradients so frequently that this performance can be regarded as normal. Probably this state of affairs is due to the gaining of time day after day, although the shortness of the start-to-stop sections, necessitating hard running intermediately, also contributes. Delays through permanent way repairs rarely appear to be of great moment on this section, and they certainly were not so in the period covered by the figures we gave. —ED. *R.G.*]

Emergency Warnings

The Stock Exchange,
London, E.C.2
January 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In view of the recent serious accidents which have occurred owing to obstructions on lines where signals were clear, is it not time that guards and drivers should be supplied with emergency warnings more readily available than fog signals. I have seen a suggestion of engines being fitted with searchlights but I have seen no suggestion of Verey lights or flares which seem to me as a layman much more likely to be effective and safer to use.

Yours faithfully,
CONSTANT READER

[The use of flare lights as a signal of danger has twice been recommended in railway accident reports. The first of the two occasions was in the report by Colonel Yorke on the collision at Kirtlebridge, Caledonian Railway, on April 6, 1909, between a down passenger train and some wagons that had been derailed from an up train and had fouled the down line. The report by Colonel Pringle after the Ais Gill collision of September 2, 1913, made a similar recommendation. Nothing practical, beyond experiments, has yet been done therein by British railways and the reason for this inaction is suggested by the wording of that particular recommendation. Colonel Pringle's words were "(b) That all guards' vans upon main line or express routes be furnished with a sufficiency of colour flare lights which can readily be ignited on every occasion that a train is stopped in section. Experiments will show whether any type of flare light will be suitable as a warning by day as well as by night." In a following paragraph Colonel Pringle acknowledged that there were difficulties, as he proceeded to say "The adoption of the recommendation (b), will necessitate some addition to, or alteration in, rule 217 (a) which, as it stands at present, is not always practicable."—ED., *R.G.*]

PUBLICATIONS RECEIVED

The Tragedy of Henry Thornton. By D'Arcy Marsh. London: Macmillan & Co. Ltd., St. Martin's Lane, W.C.2. Toronto: The Macmillan Company of Canada Limited, at St. Martin's House. 9 in. × 6 in. × 1 in. 293 pp. Price 10s. 6d. net.—The railway situation in Canada has produced quite a number of interesting volumes within the last year or two, some admitting their partisanship for one or other of the great systems, and others attempting impartiality. In the main, however, the personal element has been omitted, or has emerged as but a secondary note, and it is in this respect that the present volume differs from its predecessors. It does not purport to be a biography of Sir Henry Thornton's whole life, but only an account of the work which he performed in Canada during the last decade of his business career. The author was born and educated in England, but subsequently graduated from the University of British Columbia, and during the past seven years has been active in Canadian newspaper circles. In this volume he has painted us a picture in vivid colours with the avowed object of enlisting our sympathy for Sir Henry Thornton, who he describes as having "died with his reputation dimmed and his vast achievements—vast within the limitations of his task and his time—obscured by the erosion of skilfully manipulated propaganda." While the relationship between the two great Canadian railway systems remains unsettled, it is impossible to form an accurate impression of any of the railway leaders (and of these Sir Henry was certainly among the greatest) who played, and in some cases are still playing, prominent parts. In England Sir Henry had undertaken the reorganisation of the Great Eastern Railway, and, despite this inauspicious entry into British railway affairs, rapidly gained popularity. He enhanced his reputation during the war period by the share which he took in the work of transporting troops; he became naturalised and received a knighthood, and when he finished his work as Inspector-General of Transportation, may be considered to have reached the zenith of his career.

Sir Henry accepted the presidency of the Canadian National Railways at a time when the Government-owned railways of the Dominions were a system only in name, and were, in fact, lengthy sections of line which the Government had sponsored or acquired for a variety of reasons and without settled policy. Sir Henry secured an assurance from the Liberal Prime Minister of Canada that the management of the Canadian National Railways would be freed of political influence, and the fact that he sought such an assurance before accepting office clearly indicates Sir Henry's determination to undertake the management on sound commercial lines, at any rate so far as is possible in a country where the railway systems are the main agents of developmental and colonisation work. It cannot be controverted that in a large measure Sir Henry's activities were crowned with success, for he welded a series of somewhat scrappy lines, some of them none too well maintained, into a great national system. This development naturally involved much expenditure, which was accepted without demur until the commercial depression of 1929, and the "tragedy" as seen by Mr. D'Arcy Marsh is that Sir Henry was severely criticised both in the Canadian newspapers and by the Government for methods and expenditure which in more prosperous times passed unquestioned. Sir Henry was forced to resign and died suddenly while he was actively planning to carve out a new career for himself in India.

Much of this book is fascinating, and well worthy of being placed on record. Certain original documents and letters which are quoted (and in two instances reproduced in facsimile) have not been published previously, and therefore have permanent reference value. Perhaps the least satisfactory feature of the book is that the author states a case, justifiably partisan, in phraseology which does not appeal strongly to British readers, and he probably has alienated much sympathy which he might otherwise have won when he describes Sir Henry Thornton in such terms as "a man who built himself into a legend and translated that legend into steel and concrete, into an enormous integrated system of transportation, who ruled a territory which extended for more than twenty-two thousand miles, and who infused a vast, sprawling organisation with a corporate enthusiasm unprecedented in the annals of commercial conflict. In the course of the ensuing competition the legend was destroyed, the man was destroyed, and the enthusiasm all but shattered."

Buildings for Aerodromes.—This, the second edition of a pamphlet issued by the British Steelwork Association, Westminster, is an attractive production consisting principally of a series of illustrations of various steel-framed aerodrome buildings in this and Continental countries. The examples chosen—which include Croydon, Heston and Manchester, aerodromes used by big Railway Air Services' planes—are impressive for their appearance of simplicity and efficiency. The accompanying text stresses the fact that, although great advances have been made since Bleriot's first Channel flight of 26 years ago, there is still a vast volume of potential traffic untapped. The chief reason for this appears to be the comparative scarcity of aerodrome accommodation. In this connection Herr Kronfeld wrote recently to *The Aeroplane*, "There are, I believe, some 20,000 people in this country who have learned to fly, and yet only 500 owners. In 25 years only 500 owners!" His solution is to provide a light aeroplane—a superior sort of glider—capable of landing on almost any field. The more practical and attractive proposal seems to be that suggested in this booklet—build more aerodromes.

Pocket Racing Calendar.—A handy little pocket racing calendar, giving all the principal 1936 meetings, has been issued by the G.W.R. and will be sent free of charge upon application to the Superintendent of the Line, Paddington station, London, W.2, upon receipt of a stamped addressed envelope or halfpenny stamp to cover postage.

Mechanical World Year Book, 1936. London: Emmott & Co. Ltd., 28, Bedford Street, W.C.2. Manchester: 31, King Street West. 6⅜ in. by 4¼ in. 360 pp. and diary. Price 1s. 6d. net. —The use of steam for heating has been much advocated as a means of securing economy, particularly in factories generating their own power, and a new section has been included in the 1936 edition dealing with the strength of tubes, cylinders, and pans subjected to external pressure. The formulæ will doubtless be found to have many applications in other directions besides plant for industrial process work.

Tool Steels.—The whole range of tool steels supplied by the English Steel Corporation Limited, North Street Works, Openshaw, Manchester, is set out in a new conveniently indexed and strongly produced catalogue, of which we have received a copy. The characteristics of all grades, which comprise high-speed steels, hot forging die steels, plain carbon, and special tool steels, are clearly stated, together with sections on the preparation and hardening of dies. Working data are shown with appropriate prominence. The list of high speed steels is prefaced with a chapter dealing with their general treatment and use.

Crankshaft Hardening. — Sole British rights in the German Doppel-Duro process for the hardening of crankshafts, pins, journals, tools, &c., have been acquired by the Shorter Process Co. Ltd., Celtic Works, Savile Street East, Sheffield, which firm is also prepared to license the operation to British manufacturers. For British purposes it is known as the Shorter-Double-Duro process, and its characteristics are set out in an illustrated folder, of which we have received a copy. Important advantages are that the hardened outer zone forms a high surface resistance material around a tough centre core, the transition between the two being even and gradual. The cost of hardening is low, and the process can readily be incorporated in mass production systems. Soft spots cannot develop, and maximum wear resistance is combined with maximum core strength, the depth of the hardened zone being controllable within wide limits according to individual requirements.

THE SCRAP HEAP

Not long ago a customer complained to Carter, Paterson & Co. Ltd. that a parcel hadn't been delivered. The firm duly provided a proof of delivery and received the following reply: "Received parcel O.K. My sister took it in when nobody was at home."

* * *

It is told of a certain Midland Railway guard, residing in a small town in the Midlands, that one night, while sleeping in a chair by the fire, he surprised his wife and family by suddenly jumping up, seizing the cat, who was asleep on the rug, bundling her into the oven, banging the door to, and then shouting "Any more for Nottingham?"—*From "The Windsor Magazine" of March, 1897.*

* * *

It appears that the L.M.S.R. "10 o'clock train" from Euston was inaugurated in 1848, and that during the next fourteen years its precise departure time varied on a number of occasions. 10 o'clock exactly was standardised in June 1, 1862, and has since remained.

The Flying Scotsman of the L.N.E.R. was also standardised at 10 o'clock in June, 1862, after having been run for the previous ten years at various times, such as 9.15 and 9.30. Since 1862 the Flying Scotsman from King's Cross has remained constant at 10 a.m., excepting during the latter part of the war period when it left 30 minutes earlier.

* * *

The Railway Times of October 23, 1841, published a letter from "A proprietor of the L.B. & S.C. Ry. since 1837" suggesting that the company should run a train between London and Brighton to be called "the slow train" at a speed not to exceed 17 m.p.h. exclusive of stops, since so many women and children were frightened at the speed of the company's trains and would be prevented from travelling!

* * *

Often on a Sunday afternoon (*circa* 1895) there would be a small compartment reserved on the steam tram that ran between Athens and the shore of Phalerum; it stopped opposite the palace. Then came a prodigious tootling from the bugler, and King George and several of his family came out and walked briskly across towards it. If they did not come at once, or if they loitered, the driver touched the whistle, and they made better speed and climbed quickly into their compartment so as not to keep their lieges waiting. Had they not done so, the driver, after this warning, would undoubtedly have moved off without them, leaving them to wait for the next tram or take a cab, and so they hurried. This royal simplicity pleased the Greeks: that was what a king should be.—*From "As We Were," by E. F. Benson.*

EARLY RAILWAYS AS PUBLIC HIGHWAYS

When the Whitby & Pickering Railway was opened in 1836 (the final section—between Grosmont and Pickering—was opened with horse traction on May 26), a descriptive book of it was issued. This was written by Henry Belcher and illustrated from drawings by G. Dodgson. The illustrations in this book are historically interesting, for they show quite clearly that early railway lines were just ordinary roads with rails laid on them to facilitate the passage of vehicles with flanged wheels. Early types of lines were to all intents and purposes public highways, and the author makes it clear that anybody might use the line for any kind of traffic, if only he had vehicles with flanged wheels, would pay the necessary tolls to the company, and would undertake not to use steam power. One of the illustrations in the book shows an unfenced open road, with cattle and foot passengers walking along and a one-horse coach just ahead of them, and children playing quite close to the line. There is no indication of a station or platform, so apparently the coach would stop anywhere for passengers.

Titles of Chief Railway Officers

Designations des fonctionnaires principaux des chemins de fer
Dienstbezeichnung der oberen Eisenbahnbeamten
Titulos de los dirigentes de servicio de ferrocarril

English	French (Français)	German (Deutsch)	Spanish (Español)
Chairman	Président	Vorsitzer	Presidente
Vice-Chairman	Vice-Président	Stellvertretender Vorsitzer	Vice-Presidente
Directors	Administrateurs	Mitglieder des Verwaltungsrats	Administradores o Vocales
General Manager	Directeur-Général	General-Direktor	Director-Gerente
Secretary	Secrétaire	(No equivalent officer)	Secretario
Chief Accountant	Chef de la Comptabilité Générale	Leiter der Finanzabteilung	Jefe de la Contabilidad General
Chief Cashier	Caissier Général	General-Kassen-Rendant oder Haupt-Kassenrendant	Cajero
Chief Law Officer	Chef du Contentieux	Leiter der Rechtsabteilung	Jefe del Contencioso
Solicitor	Avoué	Rechtsanwalt*	Letrado
Attorney	Notaire	Notar*	Apoderado
Registrar	Conservateur des Titres	(No equivalent officer)	..
Staff Assistant	Chef du Personnel	Personalreferent	..
Chief Storekeeper	Chef du Service des Approvisionnements	Leiter der Einkaufsabteilung	Jefe de Almacenes or Guarda Almacén
Chief Mechanical Engineer	L'Ingénieur en Chef du Matériel et de la Traction	Leiter der Maschinentechnischen-abteilung	Ing. Jefe de Material y Tracción
Works Manager	L'Ingénieur en Chef des Ateliers	Werkdirektor	Jefe de la División de Talleres
Running Superintendent	L'Ingénieur en Chef de la Traction	Zugförderungsdezernent	Ing. Jefe del Movimiento
Chief Civil Engineer	L'Ingénieur en Chef du Service de la Voie et des Travaux	Referent für Oberbau und Hochbau	Ing. Jefe de Via y Obras
District Engineer	L'Ingénieur de l'Arrondissement	Bautechnischer Dezernent	..
Chief Electrical Engineer	L'Ingénieur en Chef des Installations Électriques	Leiter der Elektrotechnischen-abteilung	Ing. Jefe Servicio Eléctrico
Operating (or Traffic) Superintendent	Chef de l'Exploitation	Betriebsleiter	Jefe de Explotación
Chief Goods Manager	Chef du Service des Marchandises	Vorstand des Güterverkehrsamts	..
Claims Officer	Chef de la Division des Reclamations	(No equivalent officer)	Jefe de Reclamaciones
Chief Medical Officer	Chef du Service Medical	Vertrauensarzt	Jefe del Médico o Jefe del Servicio Sanitario
Signal and Telegraph Superintendent	Chef des Services des Signaux et de la Télégraphie	Sicherungs-u. Fernmeldedezernent	..
Auditor	Commissaire des Comptes	Leiter der Rechnungsprüfung	..
Assistant	Adjoint	Unter- oder Hilfs- (before corresponding title)	Adjunto

* These titles are not used officially on the Reichsbahn as designations of rank

A useful table, reproduced from the "Universal Directory of Railway Officials and Railway Year Book"

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

Viceroy's Platform at Imperial Delhi

A special platform has been built at New Delhi station for the use of the Viceroy at a cost of Rs. 50,000 (£3,750). The platform is approached through a spacious, marble-floored hall. Some 300 labourers have been working day and night in order to complete it before the return of Lord and Lady Willingdon from Calcutta.

Cochin Harbour Works

With the settlement of the dispute between the Governments of Madras, Cochin and Travancore in regard to the financial arrangements for the development of Cochin Harbour, the fourth stage of development work is about to be undertaken. In the first place, a combined road and railway bridge connecting Ernakulam with Willingdon Island will be built. Another road bridge will connect the Venduruthi reclaimed area with Mattancheri. The railway now terminating at Ernakulam on the mainland will be extended across the backwater into the reclamation area.

Developments in the Coimbatore Area, S.I.R.

The South Indian Railway administration has found it necessary to remodel Coimbatore station in order to cope with increased traffic and to provide improved facilities for travellers. The work will be done in two stages, the first of which, the construction of an island platform and an overbridge, has already been taken in hand.

Sanction has also been accorded to a detailed survey of the proposed Singanallur-Coimbatore link. This line is intended to facilitate traffic between Mettupalayam and Madras. A proposal is also under consideration to extend the metre gauge line from Podanur to Coimbatore so that through metre gauge connection between Coimbatore and the Dindigul-Pollachi area may result.

Earthquake-Resisting Structures

Of the three photographs [from which the illustrations on page 211 have been prepared—ED. *R.G.*], one is of the Assistant Mechanical Engineer's bungalow at Quetta, which was occupied by Mr. Booker during the recent disastrous earthquake. This bungalow was designed and built as an earthquake-resisting building after the Machh earthquake in August, 1931. It consists of a framework of steel rails with cement mortar brick panels. This particular building was near the station, right in the heart of the most severely shaken area at Quetta, all the other buildings adjacent to it having been severely damaged, if not razed to the ground; and the photograph bears testimony to the success of this earthquake-resisting design and construction. Not a single crack occurred in any part of it, and the only complaint from Mr. Booker was that the furniture chased him round the rooms as he tried to get out. Much has been written about the damage at Quetta, but little mention has been made of this building, which, today, stands alone among the ruins. It is particularly interesting to have an example of an earthquake-resisting dwelling which has actually been tested in as severe a shock as is ever likely to be experienced. The designs of the new railway buildings in Quetta are being modelled on this steel-frame structure.

Replacement of Damaged Bridge by R.C. Structure

The other two illustrations show the reinforced concrete culvert that is being built to replace the 10-ft. girder bridge near Quetta, the only one damaged by the earthquake. It is designed to take Heavy Mineral, the heaviest Indian (broad gauge) standard of loading and is a monolithic structure.

For spans up to 6 ft. the r.c. slab type of bridge has been used in large numbers for many years on the North Western Railway, but this box type 12-ft. span is new, only one other bridge recently having been rebuilt with it. It is expected to withstand earthquake shocks effectively, and hence its use near Quetta.

Royal Charter for Institution of Engineers

The grant of a Royal Charter to the Institution of Engineers (India) is a fitting recognition of the meritorious achievements of engineers in the development of the country. As the President of the Engineering Congress recently held in Bombay observed, engineers have contributed substantially to the wealth and comfort of mankind. India's roads, railways, canals and industries provide living testimony to the splendid part played by engineers.

Mr. H. J. Nichols of the B.B. & C.I. Railway read an interesting paper on the construction of the Nerbudda bridge at Broach before the congress. The old bridge was built in 1881 and was tested in 1925 and 1926. The contract for the reconstruction of the bridge was signed in May, 1933, and the last span was completed in May, 1935. A sum of Rs. 28·60 lakhs was spent on the superstructure of the reconstructed bridge, and the piers and abutments involved an expenditure of Rs. 28·80 lakhs, so that the total cost of the bridge itself was about £430,000. The new bridge which has just been formally opened by the Governor of Bombay and named the Silver Jubilee bridge, will facilitate acceleration of traffic by the provision of two tracks over the bridge in place of the single line on the old structure. The interest of the paper was enhanced by cinema films of the work at different stages of progress.

IRAN

Indo-Iranian Railway

In the November 22 issue of THE RAILWAY GAZETTE, mention was made of the visit of the Iranian Foreign Minister to Delhi. The visit was, it seems, informal, but officials of the Government of India took the opportunity of discussing with him various matters concerning the frontier between the two countries. The question of reopening the railway from Nok Kundi to Zahidan (Duzdap) was among these, as the Iranian Government is anxious for its reopening as soon as possible. It was, however, pointed out that, from the Indian side, this work would be unremunerative, and that the traffic to be expected is insufficient to justify any such action on the part of India. It therefore remains for the Iranian Government to consider whether additional trade anticipated, as likely to accrue to that country, would be sufficient to warrant its assisting financially in the rehabilitation of the disused track, or otherwise to make such action worth while for the Government of India. Attention is also now drawn to the article published in our issue of July 26, and its map showing the position of this railway—which is of 5 ft. 6 in. gauge—relative to the 4 ft. 8½ in. gauge Iranian State system.

MANCHUKUO

Railway Developments: Mileage in Operation and Under Construction

Since the last review, published on page 520 in THE RAILWAY GAZETTE of September 28, 1934, a total length of 1,499 km. (931 miles) of new lines has been added to the Manchukuo railways. A further 925 km. (575 miles) are under construction and expected to be opened to traffic during 1936. The total mileage of the Manchukuo system now in operation is therefore as follows:—

South Manchuria Railway	1,129 km.	(702 miles)
Manchukuo State Railways:—		
4 ft. 8½ in. gauge lines	5,443 km.	(3,382 miles)
5 ft. 0 in. gauge lines	1,489 km.	(925 miles)
Private companies' lines	343 km.	(213 miles)
Total mileage in operation	8,404 km.	(5,222 miles)

Of the former Chinese Eastern Railway lines, 1,731 km. (1,075 miles) are now included in the Manchukuo State system, and 242 km. (150 m.) have been converted to the standard 4 ft. 8½ in.

gauge, and 1,489 km. (925 miles) have been retained as 5 ft. gauge lines. The lines under construction are as follow:—

Pingchuan – Jehol (Chengte)	112 km. (70 miles)
Solon–Hulan Arshan ...	350 km. (217 miles)
Linkow–Chiamussu ...	200 km. (124 miles)
Linkow–Mishan... ...	183 km. (114 miles)
Hsian–Ssupingkai ...	80 km. (50 miles)

The private railways are six in number:—

1. Muleng Colliery Company (Manchu–Russian), Shachengtzu–Muleng 5 ft. gauge, branch of former Chinese Eastern Railway	63 km. (39 miles)
2. Chinchou – Chengtzutan Railway (Manchu-Japanese company) branch of South Manchuria Railway main line, 4 ft. 8½ in. ...	102 km. (63 miles)
3. Pen–hsihu–Niuhsintai Railway (Manchu–Japanese company) branch of S.M.R. Mukden–Antung line, 4 ft. 8½ in.	26 km. (16 miles)
4. Kaiyuan – Hsifeng Light Railway (Manchu company) branch of S.M.R. main line, narrow gauge ...	64 km. (40 miles)
5. Lienchiangkow – Holikang Railway (Manchu company) colliery line from the Sungari River, opposite Chiamassu, 4 ft. 8½ in. gauge	63 km. (39 miles)
6. Tsitsihar – Angangchi Railway (Manchu company) narrow gauge line	25 km. (16 miles)

New lines constructed in Manchukuo after the establishment of the new State in 1932, aggregate 2,369 km. (1,472 miles) not including the sections still under construction.

Bus Lines and Steamship Services

The State Railways operate 4,666 km. (2,899 miles) of bus routes of which 979 km. (608 miles) were opened in 1933, 2,539 km. (1,578 miles) in 1934, and 1,148 km. (713 miles) in 1935.

Steamship services cover 6,000 km. (3,700 miles) of river routes on the Sungari, Amur, and Ussuri Rivers in North Manchukuo.

Decentralisation of State Railways Management

The State Railway system, comprising 6,932 km. (4,307 miles) of lines in operation, has been divided into four divisions, with headquarters at Mukden, Kirin, Harbin and Tsitsihar, all under the control of the General Manager in Mukden.

The Mukden Division controls all lines south of Mukden; the interchange station with the Kirin Division is Chaoyangchuan, and that with the Tsitsihar Division is Chengchiatun. Its total length is 1,722 km. (1,070 miles). District Superintendents are stationed at Mukden, Tahushan, Chinhsien, Chaoyangchuan, and Shanchengchen.

The Kirin Division controls the eastern lines, and links up at Hsinking with the Harbin and Tsitsihar Divisions, and at Wachang on the Lafa-Harbin line and at Mutangchiang on the former C.E.R. section, with the Harbin Division. District Superintendents are stationed at Kirin, Hsinchan, Tumen, and Mutangchiang. Its length is 1,188 km. (738 miles).

The Harbin Division controls the north-eastern lines as far as Heiho; the interchange stations with the Tsitsihar Division are Hsinking, Anta on the C.E.R., and Peian. The length is 1,802 km. (1,120 miles). District Superintendents are at Harbin, Hengtaohotzu, Peian, Suifenho.

The Tsitsihar Division controls the north-western lines, the interchange stations are Ssupingkai, with the S.M.R.; Chengchiatun, with the Mukden Division; Hsinking, with the S.M.R., the Harbin and the Kirin Divisions; Anta and Peian, with the Harbin Division. It has a length of 2,220 km. (1,379 miles). Superintendents are stationed at Tsitsihar, Buhetu, Ssupingkai, Taonan.

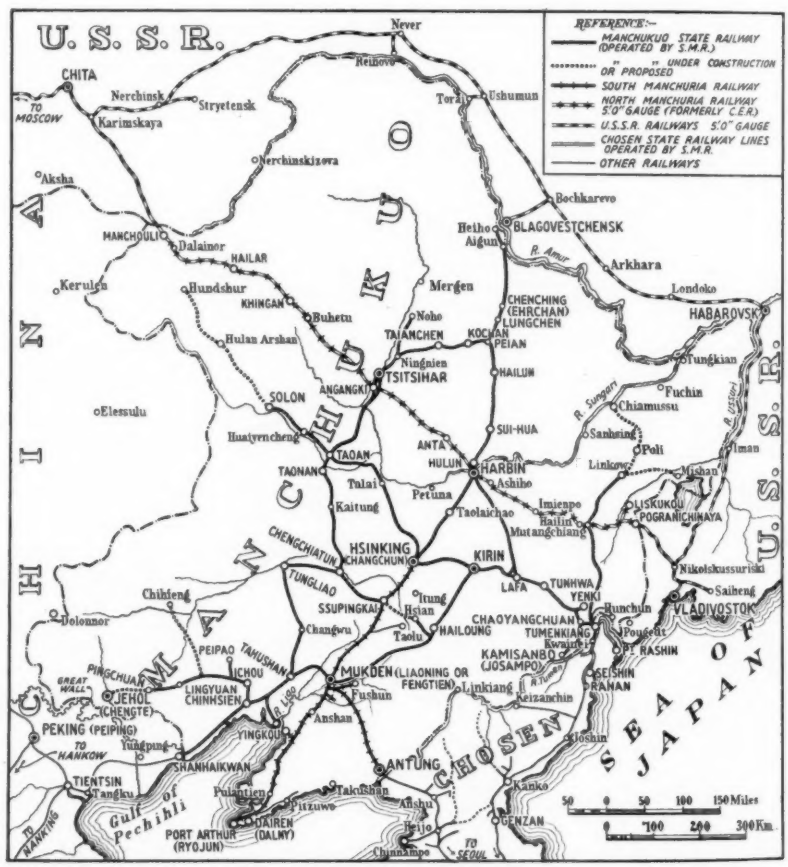
Revised Rates for Goods and Coal

New rates for goods and coal over the lines of the South Manchuria Railway and the Manchukuo State Railways, which are to come into force on February 1, have been published. The principal features of the revised rates are the unification for all lines in Manchukuo, the introduction of a sliding scale for all rates, decreasing with the distance of carriage, and special rates for the agricultural products of North Manchuria. The latter have been introduced as a result of the investigations started after requests from the traders had reached the management, when, shortly after the transfer of the Chinese Eastern Railway, some rates had been increased to bring them to the level of the other State Railway lines, as reported on page 1247 of THE RAILWAY GAZETTE for June 28, 1935.

CHILE

Proposed Underground for Santiago

According to information from Chile, a project put forward a little over six years ago—and recorded in THE RAILWAY GAZETTE of July 12, 1929—for replacing the numerous railway and tramway lines around the City of Santiago by an underground railway, about 16 km. long, with a view to relieving the traffic congestion in the streets, has again been revived, and the details of the scheme are stated to be under consideration by Señor Juan Lagarruigue, General Manager of the



Sketch map of Manchukuo railways, open, under construction or proposed, under various administrations

State Railways, and the Lord Mayor of the city. It is proposed that the scheme should be financed jointly by the State Railways, the Government and the Municipality. To the sum subscribed in this way would be added the value of the land made available by the removal of the existing surface lines and the transfer of the Alameda station to another site. According to the original plan, the line was to consist of a double-line system, each line in a separate tunnel, equipped with electric signals and all the latest safety devices.

ARGENTINA

Railway Telegraph Dispute Settled

A decree issued by the Ministry of Public Works on December 12 establishes new regulations in regard to the working hours of the railway telegraphists. By virtue of the railway working hours regulations as provided for by the Presidential Award dated August 10, which was to come into force on November 1—referred to in THE RAILWAY GAZETTE of September 13 last—the hours for telegraph clerks were fixed at eight instead of six, the period established by the agreement between the companies and the Union Ferroviaria dated February 2, 1931. The new regulation aroused violent protests from the telegraphists, some of whom resigned on the termination of the six-hour period.

An additional complication was the fact that, owing to the Government decree ordering the closing of public railway telegraph offices in places where a P.O. telegraph service was available, all the companies have large numbers of surplus telegraph clerks on their hands. Briefly, the main provisions of the new decree are as follows:—

(*a*) In those offices where each operator transmits an average of 3,600 words or more during a space of six hours, the staff shall work in six-hour shifts.

(*b*) If more than five operators are employed in any one office, the number of words transmitted shall be estimated at 600 an hour, and the six-hour shift shall be applicable.

(*c*) If the companies prove to the Director-General of Railways that the average transmission per man in such offices is less than 2,800 words in six hours, the operators shall work in eight-hour shifts.

(*d*) The companies are authorised gradually to reduce the telegraph staff, so as to obtain the highest possible output of work in each office, transferring the surplus staff to other sections.

This solution of the problem is virtually another victory for the men, but from the point of view of the companies, the worst phase is an order embodied in this decree that they must re-instate the surplus staff occasioned by the transference of the public telegraph service to the Post Office, mentioned in THE RAILWAY GAZETTE of September 27, 1935. This is obviously so unfair, that it was fully expected that the companies would not give in without a struggle, and it is understood that the Government is to be sued legally for compensation.

Harvest Prospects

The first official estimate issued by the Ministry of Agriculture of the forthcoming harvest indicates that, as a result of the prolonged drought, there is likely to be a heavy reduction in the grain and linseed crops. The appended table shows the estimated production, in tons of wheat, linseed, oats and barley for 1935/36, as compared with the previous period:—

	Wheat (tons)	Linseed (tons)	Oats (tons)	Barley (tons)
1934-35 ..	6,550,000	2,025,000	970,000	886,000
1935-36 ..	3,920,000	1,280,000	500,000	480,000
Reduction	2,630,000	745,000	470,000	406,000

FRANCE

Railway Traffic Receipts in 1935

Railway traffic receipts in France during 1935 show a decrease of nearly ten per cent. in comparison with the figures for 1934. The total receipts for the six great railway systems in 1935 and 1934 were as follow (in thousands of francs):—

	1935	1934	Decrease Per cent.
Alsace-Lorraine	653,137	755,794	12·68
Est	1,329,573	1,514,547	12·23
Etat	1,551,199	1,692,245	8·33
Nord	1,517,070	1,687,661	10·11
P.-O. Midi ...	1,993,524	2,200,002	9·39
P.L.M. ...	2,738,360	3,000,320	8·73
Total ...	9,782,863	10,850,569	9·79

For the last week in 1935, December 24 to 31, the total receipts were fr. 197,964,990, against fr. 202,912,010 for the corresponding week in 1934. The decrease is 2·37 per cent. per kilometre. The Alsace-Lorraine lines show a decrease per kilometre of 12·29, the Est 6·92 and the Etat 5·83 per cent. On the other hand, for the first time in a long period, the P.O.-Midi records an increase of 2·26, the P.L.M. 0·29 and the Nord an increase of 0·04 per cent.

In 1935 the number of wagons loaded was 14,648,009, against 15,516,945 in 1934, a decrease of 5·59 per cent. for the year. The situation for the first week in 1936, January 1 to 7, showed a continuation of the decline. The number of wagons loaded in the week was 224,981, against 255,111 in the same week of 1935, a decline of 11·81 per cent.

Abolition of Level Crossings

The abolition of 150 particularly dangerous level crossings on main roads from Paris to the chief cities and frontiers of France was recently announced by M. Laurent Eynac, Minister of Public Works, as part of a programme for highway improvements. A grant of fr. 200,000,000 in aid of the work will be made by the Ministry. A special committee, comprising representatives of both railway and road interests, has been formed to investigate possible improvements at other level crossings not included among those to be eliminated. The level crossing problem is rendered urgent by the great increase of motor-car traffic in recent years, and it is estimated that more than two million automobiles and half a million motor lorries and vans are now running on the French highways.

Metro Economies

Plans for effecting economies on the Metro lines, estimated at fr. 14,750,000, were recently approved by the Paris Municipal Council. They comprise re-adjustment of train services. Intervals between train departures will be lengthened at certain hours, and on some lines at such times a single car will be run instead of a train of five cars, as at present. When a Metro station has several entrances, one or more may be closed at fixed times other than during the rush hours, though they may still be used as exits by means of special automatic gates which bar the way to incomers.

EGYPT

Abolition of Important Level Crossing

A level crossing at Guiza—a suburb of Cairo—that is used by many residents and visitors to the Pyramids, and known as the Pyramids' crossing, is to be replaced at once by a 75 ft. subway under the Upper Egypt main line. A double line of trams will pass through the subway with a roadway on each side. This will enable the Pyramids Crossing signal cabin to be closed, will greatly expedite traffic, and tend to develop the new suburb to the east of the line.

SOUTH AFRICA

Tourist Traffic

Within the next few months about eight hundred "round the world" tourists will visit Johannesburg. The main body of the tourists will arrive at Capetown in the *Empress of Britain* on January 25. These will travel to Johannesburg in four special trains each carrying about a hundred passengers. The Hamburg Amerika liner *Reliance* will bring its quota of visitors to Capetown on February 6, about one hundred of whom will visit Johannesburg. The *Franconia*, reaching Capetown on February 3, will have about eighty tourists for Johannesburg. The motor ship *Stella Polaris*, the last of the 1936 world tourist ships to visit South Africa, will probably have about one hundred visitors for the Rand. The travel arrangements in South Africa are being handled by the Publicity and Travel Department of the South African Railways.

FURTHER IMPRESSIONS OF OVERSEAS TRANSPORT

I—A journey from Cape Town to Kimberley by the Rhodesia Express illustrates the high standard of passenger accommodation on the premier South African services

By A. W. ARTHURTON, formerly Secretary, British Railways Press Bureau

MY tour round the world last year has, I am afraid, proved somewhat unsettling, for the approach of winter in England, with its short days, fogs and incessant rain, turned my thoughts again to the Southern Hemisphere, where midsummer falls at Christmastide. South Africa seemed to offer possibilities of sunshine and transport interest, and I therefore arranged to leave England for the Cape at the latter end of November. Steamship services between Europe and South Africa are many and varied, no fewer than five different lines competing for the patronage of travellers. The Royal Mail service of the Union Castle Line comprises some twenty vessels, ranging from 20,000 to 5,000 tons; two further motorships of 25,000 tons, and two of 15,000 tons are under construction, and will be placed in service this year. One of the nine largest vessels plies weekly between Southampton and Capetown, with only one call at Madeira, afterwards going round to Durban and calling at Capetown again on the return journey. There is also an intermediate service from London fortnightly via the West Coast, and for East Africa via the Suez Canal.

The motorship *Warwick Castle*, by which we travelled, carried over 600 passengers, about equally divided between first, second, and tourist classes, necessitating two special trains from Waterloo to Southampton. Madeira was reached on the morning of the fourth day, and the sun made its first appearance. A favourite excursion in Madeira is by the mountain railway to the Esplanade, 3,285 ft. above sea level. The ascent by the rack railway takes about half an hour, and the view from the top is very fine, the whole of the island being spread out before one's eyes. The return journey is made by toboggan—four miles of swift running over the stone-paved road with a man on each side of the sled to keep it straight. Another excursion can be made to Belmonte, which is little more than half the height, but provides a similar climb by railway and a thrilling run down for two miles by toboggan.

In addition to the quaint bullock sledges there are now, of course, plenty of motorcars, which afford a quicker if less unusual method of transit. The taxis are luxurious vehicles and fairly cheap, and the drivers show great skill in negotiating curves and gradients on the slippery stones. A further method of transport is by hammock, which, slung on a pole between two men, enable visits to be paid to the higher regions of the island where horse or motorcar cannot climb.

The *Warwick Castle* berthed at Capetown on Monday morning, 17 days after leaving Southampton, and we lined up for immigration and Customs inspection at 7 a.m., but it was 10.15 a.m. before the first portion of the Union Limited left for Johannesburg, 956 miles distant. A second portion left half an hour later. This well-known express runs on Mondays only, on the arrival of the mail boat, and is first class only.

The train, made up mainly of sleepers and diners, is the " blue train " of South African railway travel, and is actually blue in colour. The coaches, although the gauge is 3 ft. 6 in. only, are as wide as in England. The sleeping berths are across the coach, as with us, the day compartments being made up into sleepers with an upper and lower berth on each side. Shower baths are provided on the train, and a washbasin, covered with a lid to form a table, is fixed under the window in each compartment. The windows are large, and provided with both shutters and blinds, and the sliding door has a full-length mirror inside. Racks and pegs are provided for clothes, but no wardrobes, as in Australian sleeping cars. No charge is made for a sleeper, but 3s. a night has to be paid for bedding (presumably for washing), and a mattress can be obtained for a small extra charge.

As we were stopping over at Kimberley instead of going direct to Johannesburg, we travelled by the Rhodesia Express, which left at 11.10 a.m. This carries first and second class passengers, and the equipment of the train is similar to that of the Union Express, except that there are no shower-baths.

The dining cars are very long, and seat 42 diners at tables for four and two respectively on each side of the gangway. The kitchen car also contains sleeping accommodation for the staff, who work through to Bulawayo on the Rhodesian Railways. Cooking takes place in a coal-burning range as on the Australian railways, as oil-gas is not available, and the cost of installing electric cookers is prohibitive. There is a chief steward on each train who has charge of the catering and sleeping arrangements; the train crew consists of a conductor or ticket collector, a guard, and dining and sleeping car attendants, all white men.

The Ocean Specials run from the ship's side at Capetown Docks, and are hauled over the dock lines by small engines, which are replaced when the main line is reached by the largest type of passenger locomotive. Soon after leaving Capetown the great bulk of Table Mountain and the intensely blue water of Table Bay disappear from view, and for a hundred miles or so the railway runs through a wide valley, each side of which is a continuous range of curiously shaped mountains of no great height and completely bare of vegetation.

Gradually the mountains on each side draw closer to the railway, until at Worcester the majestic bulk of the Matroosberg looms overhead. Along the Breda River the line runs almost in a gorge, and emerges into the beautiful Hex River Valley.

A powerful banking engine came on in the rear of the train, which performed some remarkable evolutions in coursing round the contours of the foothills on a 1 in 40 grade. On the other side of the pass was the Great Karroo, a seemingly limitless plain that faded away to the horizon. After a first impression of utter starkness, the eye picks out countless white dots, like rocks, which indicate the presence of sheep in large numbers, for this portion of the great plain is favoured with a moderate rainfall, and feeds South Africa's finest woolled sheep.

We were booked to breakfast in Kimberley, but holiday traffic was responsible for the congestion of the long single line which stretches 1,500 miles or more up to Rhodesia, and a possible late arrival decided us to breakfast on the train. By this time we had crossed the very long Orange River bridge and entered the Orange Free State. Subsequently the Modder River, famous in the Boer War, was crossed and soon after we reached Kimberley, which is situated as high above sea level as Ben Nevis.

THE VARIED RESPONSIBILITIES OF A RAILWAY ELECTRICAL ENGINEER

As a typical example of the scope of an electrical engineer upon a British railway, the career and experience of Mr. J. Dalziel, the recently-retired Assistant Electrical Engineer of the L.M.S.R., are recorded in the article of which this is Part III and conclusion

Work on the electrification of Derby shops began by making what use was possible of the small available capacity of the existing generating station. A few electric drives of small horsepower were installed in the locomotive shops, and a great deal of work was done in providing temporary electric drives for machines specially required on overtime. This, besides being useful to the shop management, provided useful data as to power demands, speeds, &c., and a number of other machines were also temporarily driven electrically with a view to obtaining such data. The driving engines in both locomotive and carriage and wagon shops were also indicated with and without the driven machinery at work.

Electrification of Derby Shops

The programme included the electrification of the whole of the Derby shops of all departments as one complete job, only a very few machines such as hydraulic pumps, remaining steam-driven so that their exhaust, with that of steam hammers, could be used for heating purposes. This programme was duly followed, and a new power station—the 1,250-kW. turbines of which were incidentally the first of their size to run at 3,000 r.p.m.—was put down in 1910. From the cutting of the first sod to putting the first boiler and turbo-generator on outside load just four months and a day elapsed.

Low tension a.c. was generated for use in the locomotive shops, but this was transformed to high tension for transmission to the carriage and wagon shops, ¾ mile away, there again being transformed down for distribution. Electrification work in the carriage and wagon shops had already begun the previous year, power being taken from the old power station by a.c. transmission supplied through an inverted rotary, which with its transformer was subsequently used right way up in the substation.

Increase in Power Developed

For cranes—and subsequently also for variable-speed tools—d.c. was obtained by conversion. The installation of motor drives was completed as far as possible in all four sets of shops, namely, locomotive, carriage and wagon, telegraph and signal, within about two years. By that time the carriage and wagon shops' load had risen to about 50 per cent. above the effective power of steam days, but at the present day it is nearly five times the steam figure; in the locomotive shops the rise has been to about three times.

The margin of capacity over demand in sight originally provided, both as regards cable work and in the power and substation provision, was reasonable but not excessive. Extensions have consequently* had to meet their fair share of installation costs, and there has been no waste of capacity as there might have been had extensions provided for in the individual shops not materialised. In the power station the effect has been to enable the station successively to enlarge with modernised plant and so maintain its efficiency. As a result, it has always been well up to date and its costs have always been low; it reached a figure of just over 0·3d. a unit including all charges just before the war.

Cheap Fuel for Derby Plant

The Derby power station was designed to burn and always has used the lowest grades of "smudge" or "duff" fuel, the cost of which at pit has in pre-war times been as low as 6d. a ton, and the average cost over a year approximately 2s. During the war these prices increased very greatly and at the same time quality deteriorated owing to higher ash or dirt content. The cost is still above any pre-war figure. The only occasion when the station failed to burn the fuel supplied was when it contained 49 per cent. of non-combustible material.

With a view to economy in costs and national fuel, "char," (or smokebox ashes) was first tried by Mr. Dalziel in suction gas producers, and afterwards in various steam generating plants on the Midland system, which from 1914 onwards were in his charge. The use of this char during the period of Government control of the railways saved some 30,000 tons of coal. It is still used by the Derby power station.

During the very trying war period, when Derby shops were working night and day on munition work, the load was heavily increased and all the boilers had to be fired to meet it. Also there was always some week-end load so that the time available for repair and general attention was very limited. The boilers had retort stokers with hand dumping from side plates, and the increase of dumping following the greater ash proportion of the fuel, seriously affected steaming capacity. This was met by fitting the stokers of the boilers with machine cleaning apparatus designed by the power station staff.

In 1914 the boiler house capacity was increased by fitting economisers which, with fuel at its previous low cost, had not paid. Increase in engine room capacity was effected by installing a mixed-pressure turbo-set, using exhaust steam collected from the locomotive shops by a new piping installation in combination with a shop heating scheme. In 1924 two new boilers and a new turbo-generator were installed, and in 1927 the three original boilers were fitted with modernised travelling-grate stokers and raised so as to give much greater combustion space, with the result that their original steaming capacity was doubled. Another new turbo-set was also installed.

After the railway amalgamation Mr. Dalziel was concerned with various schemes—none of which, incidentally, has yet fructified—connected with the enlargement and modernisation of the Formby and Stonebridge Park generating stations. Otherwise he has been more concerned with the successive closing of all the old Midland power stations, except Derby and Oakham, in favour of public supply.

Hotels

Mr. Dalziel was responsible for a new power station, heating, ventilation, domestic hot water, and electric installations, lifts, &c., at the new Midland Adelphi Hotel, Liverpool, in 1912: here the engines exhausted into calorifiers to supply steam for heating and hot water services.

* Parts I and II appeared in our issues of January 17 and January 24 respectively.

The usual vicissitudes of a new job presented themselves very speedily at the Adelphi. Many hundreds of guests were in the hotel on the evening following the opening dinner, when Mr. Dalziel received a message that the corporation water supply pressure had dropped and the boiler feed water supply had failed, and that it would be necessary to shut down. As it happened Mr. Dalziel knew exactly where to find his friend and colleague the Midland Chief Fire Superintendent and after a somewhat anxious period, with his assistance and some strenuous work by Mr. Dalziel's own staff, the situation was saved by a supply from the fire mains being brought through a hose line from some distance away.

A further incident also illustrative of what has sometimes to be met on such a job as that of the Adelphi, arose in connection with the development of excessive back pressure on the exhaust main. After an argument with the contractors, who maintained that they had been made to put in the exhaust main too small, the Derby staff being equally convinced that it should be large enough, the pipe was drilled at a bend where it was thought there might be an accumulation of water, and the drill went through into a 12-in. length of scaffold pole which someone had kindly dropped down the pipe.

Mr. Dalziel also dealt with the heating and ventilating, hot water supplies, &c., and electric work at the Midland Hotel, Manchester, extension in 1922, and with similar work, lifts, &c., also at practically every Midland, and later at many of the other L.M.S. hotels.

Road Vehicles

In August, 1914, the Midland Railway possessed only a very few steam and petrol lorries and vans, but, in view of petrol shortage and high costs during the war and of the special suitability of electrics for door to door work, it was decided that the additional machines then necessary—that finally numbered about 50—should be electric. Charging plant was put down, and charging methods organised, and the machines gave very good results. The Midland was also among the first users of electric tractors for the shops and in goods sheds. The electric road vehicles ran for 10 or 12 years until about two years after the amalgamation, but were then replaced by cheaper mass-production petrol vehicles, especially as the high post-war battery costs and the lower cost of petrol and improvements in petrol machines operated in favour of the latter. After the war a number of Government lorries were used by the Midland and were maintained under the Road Vehicle Section by contract. Then at the time of decontrol, a large number of Government lorries were purchased and Mr. Dalziel was instructed that they must be kept on the road. This he succeeded in doing for three years with an average loss of service over the whole fleet, petrol and electric, of only 4 to 5 days a vehicle annually. The " spare exchange " system was adopted, the vehicles being examined and component parts exchanged for reconditioned spares on a roster, a method in some ways an anticipation of the present system of locomotive maintenance.

Traction

The policy of the Midland Railway was to keep well abreast of electric traction developments, regarded, however, as much from the main-line as the suburban passenger stand-point. On this basis of consideration, there was always some doubt as to the suitability of third-rail operation, and so when the evolution of the single-phase system made overhead current collection and high voltage operation feasible, the system embodying them was recommended by the then Midland Locomotive Superintendent, Mr. R. M. Deeley, for trial between Lancaster and Heysham, where the existing power station could be used. The scheme was prepared by Mr. Dalziel and subsequently he was in charge of the power station plant and the equipment of the three motor coaches and eight trailers which comprised the rolling stock. The overhead line was installed by the Civil Engineer's and Telegraph Departments. This electrification, which was the first overhead collecting and single-phase installation in Great Britain, was, after a series of closely recorded tests, opened to traffic in April, 1908, and is still running with the original plant. The results of these tests were embodied in the paper to the Institution of Civil Engineers, jointly presented by Mr. Dalziel and Mr. Sayers, for which a Telford premium was awarded. Two of the motor-coach equipments were of Continental manufacture and one American, but the Midland officers found it possible to arrange for these to be worked in parallel on the same train.

The electrification afforded much valuable information, and much of the original overhead line, which embodied a galvanised steel stranded catenary heavily impregnated with preservative compound, with solid steel auxiliary and copper contact wire, is still in service. Portions of the catenary were, however, renewed after about 20 years' service. The rolling stock equipments, more particularly the two of Continental manufacture, required considerable reconstruction in the Derby shops, and electro-pneumatic control was substituted for the original all-electric system; they have subsequently given satisfactory service.

Mr. Dalziel, sometimes in collaboration with Mr. Sayers, prepared a number of reports on the electrification of various sections of the Midland system, and particularly in respect of the extension of the Tilbury Section electrification (from Bow to Barking) and the changeover of its source of supply from Lots Road to the County of London Company's supply at Barking, both of which schemes were carried out after the amalgamation. It was mainly in connection with electrification that Mr. Dalziel and Mr. Sayers accompanied Sir Guy Granet and the late Mr. F. Tatlow on their visit to the United States in 1913-4.

Main Line Electric Traction Schemes

Mr. Dalziel gave considerable attention to the possibilities of main-line electrification and to locomotive construction, as the Midland system, with its heavily graded sections of line carrying dense mineral and freight traffic and with limited locomotive weights, appeared more suitable for main-line electric operation than almost any other line. Consequently, he investigated the effect of electrifying the Derby-Manchester and Sheffield-Manchester sections, and was able to show very appreciable saving in running time and increase in permissible weight of freight trains with electric locomotives no heavier than the heaviest steam locomotives then in use. An appreciable reduction in the number of locomotives required was also shown. The figures formed the basis of various reports to the Midland management, then and subsequently, and Mr. Dalziel also used them in a paper on electrification read before the Midland Engineering Club in 1910—which aroused considerable interest in Derby—and in later papers and contributions to discussions of papers before the various engineering institutions.

Clearly the Midland administration was very much alive to electric traction matters, but war and post-war conditions put electrification, and particularly main-line electrification, out of court for the time being. Now, too, the improvement in the design and methods of operation and maintenance of the steam locomotive, and the reduction in the number required for given services, have removed some of the reasons previously adduced as recommendations for electric traction for main line work.

BRITISH RAILWAY STATISTICS

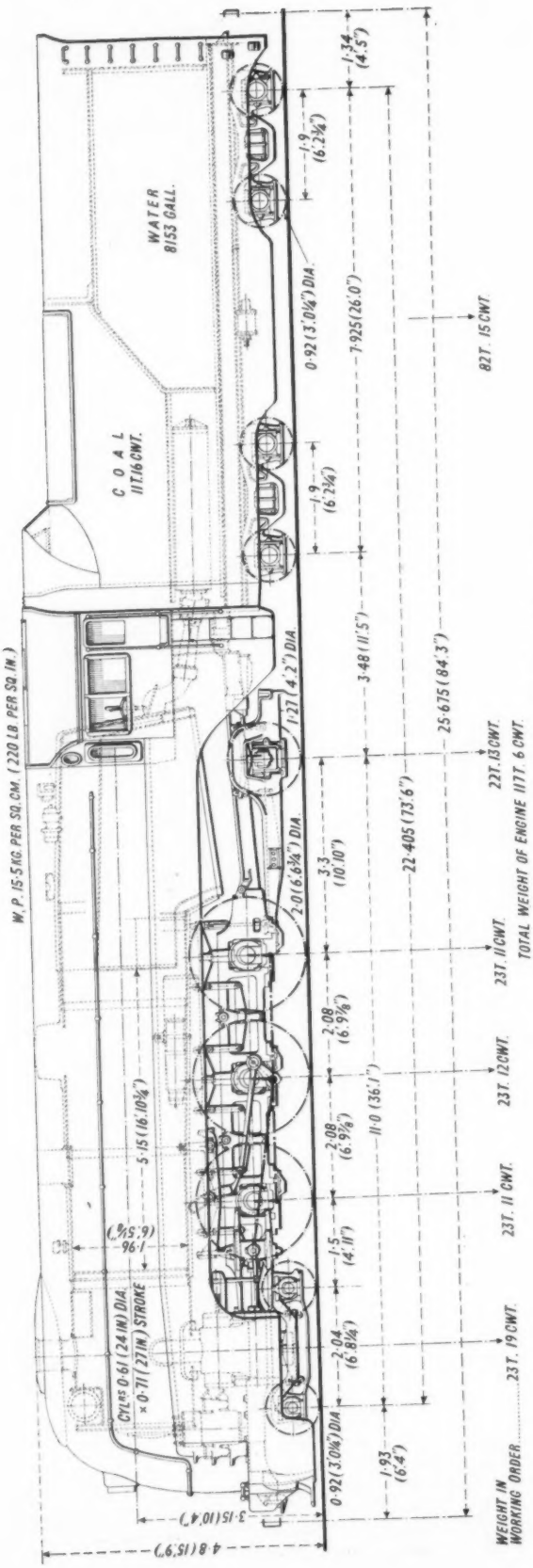
"The Railway Gazette" monthly table for Oct., 1935, as compared with Oct., 1934, compiled from the Ministry of Transport Statement No. 191

Description	Great Britain*	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.
PASSENGER TRAIN TRAFFIC—					
Number of pass. journeys (ex. season ticket holders)	103,713,405	7,370,844	14,867,640	23,866,714	17,712,189
Increase (+) or decrease (−)	+ 3,961,887	+ 105,028	+ 442,696	+ 769,691	+ 416,616
Passenger receipts (excluding season ticket holders)	£3,783,026	£484,216	£764,229	£1,175,946	£786,976
Increase (+) or decrease (−)	+ £83,490	+ £4,467	+ £19,764	+ £16,812	+ £13,663
Season ticket receipts	£811,154	£52,004	£142,239	£219,665	£257,485
Increase (+) or decrease (−)	− £45,374	− £3,887	− £9,409	− £18,033	− £6,942
Parcels and misc. traffic receipts (excluding parcels post)	£1,128,470	£199,912	£343,320	£436,801	£127,385
Increase (+) or decrease (−)	− £20,312	− £6,195	+ £8,200	− £15,945	− £5,635
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	23,591,140	5,095,428	10,336,143	10,420,670	1,367,506
Increase (+) or decrease (−)	+ 1,711,247	− 108,452	+ 251,866	+ 559,013	+ 58,131
Net ton-miles (excluding free-hauled)	1,284,223,012	233,932,440	432,307,246	523,836,234	58,403,178
Increase (+) or decrease (−)	+ 84,874,543	+ 18,306,920	+ 21,372,750	+ 40,090,948	+ 3,587,069
Average length of haul (miles) (excluding free-hauled)	54·44	45·91	41·82	50·27	42·71
Increase (+) or decrease (−)	− 1·38	+ 4·47	+ 1·07	+ 1·22	+ 0·85
Freight traffic receipts	£7,233,104	£1,226,000	£2,461,000	£2,926,000	£393,204
Increase (+) or decrease (−)	+ £236,991	+ £24,000	+ £104,000	+ £103,000	+ £965
Receipts per ton-mile	1·352d.	1·26d.	1·37d.	1·34d.	1·62d.
Increase (+) or decrease (−)	− 0·048d.	− 0·08d.	− 0·01d.	− 0·06d.	− 0·10d.
Freight train-loads : Average train-load (tons)	129·51	135·41	133·58	127·85	110·45
Increase (+) or decrease (−)	+ 5·96	+ 4·76	+ 4·11	+ 7·71	+ 7·85
Net ton-miles—					
Per train engine-hour	1,013·22	1,067·11	1,050·19	989·19	877·49
Increase (+) or decrease (−)	+ 11·82	+ 2·01	+ 8·98	+ 16·68	+ 37·22
Per shunting-hour	881·53	799·41	952·44	924·17	605·07
Per total engine-hour	471·40	457·03	499·47	477·79	358·13
Net ton-miles per route-mile per working day	2,803	2,728	2,993	3,304	1,238
Increase (+) or decrease (−)	+ 178	+ 190	+ 142	+ 243	+ 93
Wagon-miles. Total	369,411,983	65,822,892	127,720,832	155,349,239	18,200,041
Increase (+) or decrease (−)	+ 16,468,458	+ 3,943,975	+ 4,289,326	+ 7,528,209	+ 720,043
Percentage of loaded to total	67·10	69·08	64·34	68·57	66·96
Wagons per train— Total	35·23	35·50	35·43	35·46	32·45
Increase (+) or decrease (−)	+ 0·97	+ 0·93	+ 0·62	+ 1·21	+ 1·23
Loaded	23·64	24·52	22·79	24·32	21·73
Empty	11·59	10·98	12·64	11·14	10·72
Train-miles. Coaching—Per train-hour	15·17	14·13	14·28	14·51	17·76
Per engine-hour	12·15	11·28	11·09	11·06	14·70
Train-miles. Freight—Per train-hour	9·17	9·54	9·18	8·97	9·75
Per engine-hour	3·64	3·39	3·78	3·74	3·20
Engine miles. Total	45,944,662	7,287,000	12,736,541	16,962,733	6,027,254
Increase (+) or decrease (−)	+ 871,072	+ 239,400	+ 216,823	+ 239,110	+ 152,471
Mileage run by engines. Total train-miles—					
Coaching	22,629,107	3,119,392	5,142,684	7,275,760	4,400,982
Freight	10,486,333	1,854,232	3,605,010	4,381,118	560,828
Engine-hours in Traffic. Total	4,943,397	848,071	1,487,326	1,913,447	494,153
Increase (+) or decrease (−)	+ 126,764	+ 30,033	+ 32,775	+ 55,227	+ 7,727
Shunting miles per 100 train-miles—					
Coaching	7·53	6·82	6·64	8·23	8·59
Freight	73·39	84·65	69·07	68·44	96·16

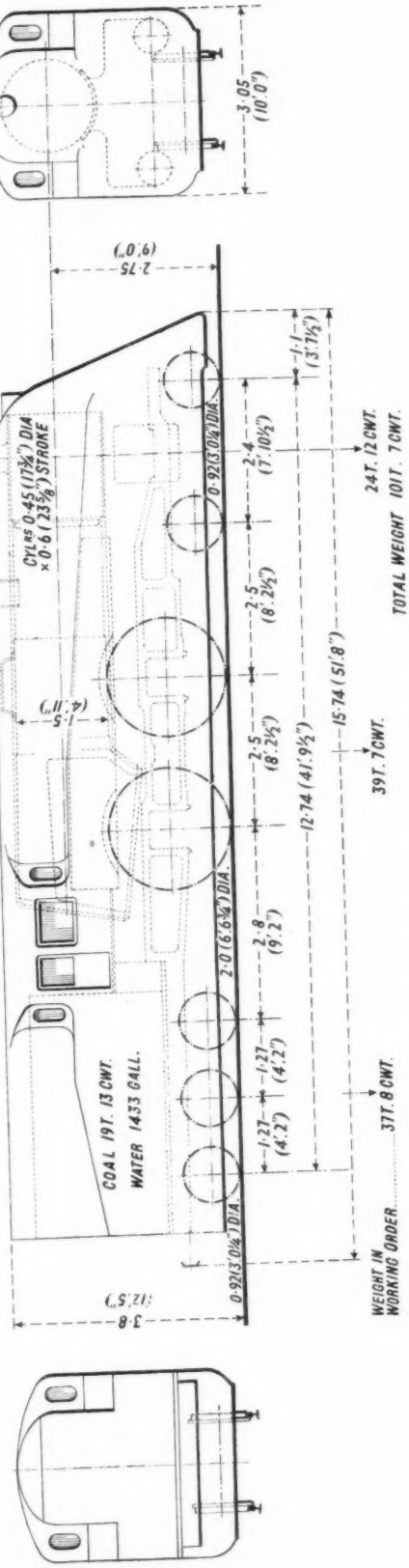
Passenger Traffic Statistics : Number of journeys, receipts, and receipts per journey (excluding season ticket holders)—October, 1935

Subject	Great Britain	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.	Cheshire Lines	Liverpool Overhead	L.P.T.B.†	Mersey
Full fares—									
Pass. journeys	32,887,509	699,919	1,164,996	1,516,613	2,685,903	18,346	162,569	25,773,485	78,956
Gross receipts	£877,145	£74,778	£125,124	£130,832	£178,678	£2,785	£1,646	£347,081	£1,385
Receipts per pass.	6·40d.	25·64d.	25·78d.	20·70d.	15·97d.	36·43d.	2·43d.	3·23d.	4·21d.
Reduced fares—									
Excursion and week-end—									
Pass. journeys	39,063,268	4,240,188	9,051,188	13,861,493	8,358,097	396,388	79,898	1,363,690	630,703
Gross receipts	£2,154,547	£329,293	£490,590	£798,560	£444,087	£20,675	£741	£29,685	£9,281
Receipts per pass. journey	13·24d.	18·64d.	13·01d.	13·83d.	12·75d.	12·52d.	2·23d.	5·22d.	3·53d.
Workmen—									
Pass. journeys	27,799,805	1,959,050	3,688,058	7,315,704	5,931,554	250,874	211,945	7,285,864	202,848
Gross receipts	£405,826	£29,302	£59,995	£117,637	£98,312	£4,327	£1,722	£81,172	£1,870
Receipts per pass. journey	3·50d.	3·59d.	3·90d.	3·86d.	3·98d.	4·14d.	1·95d.	2·67d.	2·21d.
Other—									
Pass. journeys	3,947,085	467,981	960,647	1,165,250	735,222	62,367	44,003	428,740	10,573
Gross receipts	£326,619	£46,486	£84,901	£119,700	£64,418	£3,863	£284	£3,665	£185
Receipts per pass. journey	19·86d.	23·84d.	21·21d.	24·65d.	21·03d.	14·87d.	1·55d.	2·05d.	4·20d.
Total—									
Pass. journeys	103,713,405	7,370,844	14,867,640	23,866,714	17,712,189	728,127	498,415	34,851,779	923,090
Gross receipts	£3,783,026	£484,216	£764,229	£1,175,946	£786,976	£31,792	£4,393	£461,603	£12,728
Receipts per pass.	8·75d.	15·77d.	12·34d.	11·83d.	10·66d.	10·48d.	2·12d.	3·18d.	3·31d.

* All standard gauge railways. † Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway



4-6-2 type locomotive used for hauling the Asia express



New 4-4-6 type tank engine for short distance light express trains

STREAMLINED LOCOMOTIVES, SOUTH MANCHURIA RAILWAY

STREAMLINED LOCOMOTIVES FOR THE SOUTH MANCHURIA RAILWAY

Details of Asia 4-6-2, and the new tank engines now being built in Japan which have the 4-4-6 wheel arrangement and will be used for operating short distance light express trains

LATE in 1934 a streamlined locomotive and train, known as the Asia express, began running on the South Manchuria Railway. Subsequently further engines and trains of the same general design were introduced. The locomotives are of the 4-6-2 type and the first of them, together with its train, was illustrated and briefly described in the issues of THE RAILWAY GAZETTE dated October 26 and December 7, 1934, also January 25 and May 17, 1935. In the last of these issues the principal dimensions of the locomotive were given. We are now able to supplement the previous articles by a drawing showing the general assembly of the streamlined locomotive.

The principle of streamlining having proved successful under the conditions of operation on the South Manchuria Railway, three additional engines for the same system are now being built by Japanese manufacturers. These, however, are tank engines of the 4-4-6 type, designed for working short distance light express trains.

The new tank engines will perform the same duties as the South Manchuria Railway diesel trains illustrated and described in our *Diesel Railway Traction Supplement* of April 19, 1935. The trains will be composed of three coaches similar to the articulated carriages of the diesel units. The first engine is expected to be ready for service by the end of February, 1936, and the six diesel trains were scheduled to start running on January 1 last. These tank locomotives, which will use crude oil as fuel, run on roller bearings, and the design embodies most of the special equipment of the Asia express passenger locomotives. They represent the latest design of Mr. H. Nonaka, Chief Mechanical Engineer of the South Manchuria Railway, who has recently been promoted to the position of Deputy-Director of the Tsitsihar Division of the State Railways; Mr. T. Kimura, formerly Assistant Chief Mechanical Engineer has been appointed in his place. Reference to Mr. Nonaka's career appears on page 217.

The accompanying outline drawing shows the general arrangement of the locomotives; the principal dimensions of the 4-4-6 tank engine are as follow:—

Cylinders, dia. and stroke	450 × 600 mm. (17¾ in. × 23⅝ in.)
Boiler pressure	15·5 kg. per sq. cm. (220 lb. per sq. in.)
Flues and tubes, dia. and number	90 mm., 66 ; 51 mm., 36 (3½ in., 66 ; 2 in., 36)
Wheels, coupled, dia.	2,000 mm. (6 ft. 6¾ in.)
,, bogie (leading and trailing) dia.	920 mm. (3 ft. 0 in.)
Boiler, heating surface :—	
Firebox	12·76 sq. m. (137 sq. ft.)
Tubes and flues	70·91 sq. m. (763 sq. ft.)
Superheater	21·92 sq. m. (236 sq. ft.)
Total	105·59 sq. m. (1,136 sq. ft.)
Grate area	2·83 sq. m. (30·5 sq. ft.)
Water capacity	6,500 kg. (6 tons 8 cwt.)
Fuel capacity	20,000 kg. (19 tons 13 cwt.)
Weight in working order, on bogie	25,000 kg. (24 tons 12 cwt.)
,, ,, ,, coupled wheels	40,000 kg. (39 tons 7 cwt.)
Weight in working order, on trailing wheels	38,000 kg. (37 tons 8 cwt.)
Total	103,000 kg. (101 tons 7 cwt.)
Tractive force	8,000 kg. (17,637 lb.)
Adhesion factor	5

Politics and Railways in North China

[In view of the present political tension in North China our Shanghai correspondent sends us the following press cuttings, which indicate Chinese fears of Japan's intentions with regard to railways all over that area. We take no responsibility for any statements made therein, and have so far not seen any Japanese counter-statements on the subject.—ED. *R.G.*]

A report from the Peiping correspondent of the *North China Daily News*, dated September 24, states:—

"According to what has leaked out through certain channels the Japanese . . . have very clear ideas of what they understand by the economic development of North China. Their plans are directed to the expansion, if not control, of raw products, minerals, and railways. . . . Such economic development would, however, be incomplete without the control of the chief means of transportation, the railways. For this purpose it is proposed that the S.M.R. shall take over and run the railway system of North China, and in return shall finance the construction of several new lines. The following possible extensions are already talked of:—

A line to connect the Peking-Suiyuan line at Kalgan, probably via Dolonor, with the Jehol system. This would connect the North-West direct with the ports of Manchukuo.

An extension north from Kalgan towards the frontiers of Outer Mongolia. Under existing conditions this could have only a strategical value, and would seem to be highly improbable.

A line from Shihchiachuang (the terminus of the Shansi railway) to Tsangchow and thence to a new port to be constructed at Chikow, south of Tientsin, cutting out the latter place altogether.

A line connecting Chengchow (the junction of the Peking-Hankow and Sianfu-Haichow lines) with Tsinanfu, thus bringing the products of Kansu and Shensi to the port of Tsingtau.

The agency through which these various schemes are to be carried into effect would appear not yet to have been definitely settled. One idea is to leave the development of North China in the hands of large business undertakings such as the South Manchuria Railway and Mitsubishi and treat it as a purely business concern. In recent months these interests have been paying considerable attention to the business prospects of North China, and have been sending out survey parties to Shansi and the North West."

The Peking Suiyuan line was first constructed as far as Kalgan out of the profits of the Peking-Mukden Railway, being the first purely Chinese railway undertaking; later it was extended to Suiyuan. The Kiaochow-Tsinan line running into Tsingtau is a Japanese financed railway. Kiaochow is the name by which Tsingtau was known in the time of the German occupation. Further reports are as follow:—

Tientsin, October 1: "According to information emanating from Japanese sources, the South Manchuria Railway shortly will open three new branch offices in North China, one at Dolonor (Charhar), one at Kweihua (Suiyuan), and one at Tientsin."

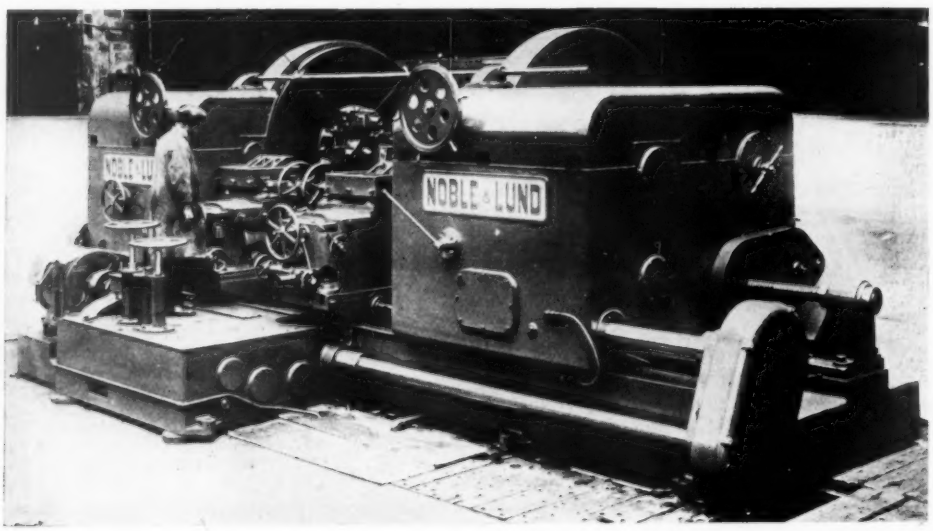
Tokyo, October 3: "Creation of a China Bureau was formally decided upon yesterday by the directors of the South Manchuria Railway Company."

Dairen, October 4: "Retrenchment of South Manchuria Railway. The diminished budget ostensibly is for curtailing generous expenditure in Manchuria, where substantial investments have already been made, and thereby to provide funds for developing North China."

A NEW RAILWAY WHEEL LATHE

Noble & Lund 78-in. machine

NOBLE & LUND, of Felling-on-Tyne, a firm which specialises in railway machines, has recently completed the first of a new range of wheel lathes, which are being marketed by Alfred Herbert Limited, Coventry. The machine possesses every feature tending to increase production and durability which the builders' experience in the construction of railway wheel lathes has shown to be desirable. It is designed for the rapid turning of new or worn wheels mounted on their axles, and in order to take advantage of the most efficient cutting tools, every component has been made of extreme rigidity so as to prevent any possibility of deflection or chatter. This massive design, together with the provision of a wide range of spindle speeds, makes it possible to use the best high-speed cutting alloys to their limit.



New Noble & Lund wheel lathe designed for rapid turning of new or worn wheels mounted on axles

The bed is a casting closely ribbed internally and of exceptional width. The bearing surfaces are broad and accurately finished to take headstocks and slides. In the centre of the bed large chutes are provided for carrying the turnings to a pit in the foundation. All headstock gears are enclosed in two substantial heads, in which each gear shaft has at least two rigid bearings. A handwheel controls the sliding internal spindle and each head is mounted on three machined ways of the bed. The pinion shafts are of high carbon steel with solid forged pinions. Each of these shafts is carried in three gun-metal capped bearings arranged so that two of the bearings are one on either side and close to the pinion. The left-hand headstock is located by means of a narrow way with an adjusting strip, and is prevented from lifting by strips bolted to the underside. The right-hand headstock is adjustable along the bed by quick power motion driven by reversing motor mounted at the rear.

The main spindles are of chilled cast iron and of very large diameter, revolving in bearings fitted with renewable half bushes with caps. Thrust is taken by large diameter ball races. To receive outside journals of axles for carrying lathe centres for dealing with axles of the inside-journal type, steel sleeves having tapered bases are fitted inside the main spindles. These are adjustable in or out by handwheels placed conveniently to the operating platform. The face plates are of rigid box section, tee slotted to take drivers, and have recesses to accommodate outside crankpins.

Lubrication is automatic for the whole of the driving mechanism. A central tank supplies filtered oil to these reservoirs for the two headstocks and gearbox respectively. The oil feeds each bearing and cascades on the gears providing ample lubrication to all parts. The tool slides are of cast steel and are mounted on intermediate slides which can be set to an angle of 1 to 20 to suit the treads of wheels, or can be set square for tyre boring, &c. The intermediate slides are mounted on massive pillar rests which are adjustable on the base plates for in-cutting feed and for setting to suit the size of wheels being turned.

The design of tool rest used, of the continuous feed type, obviates the necessity of slacking off and retightening a number of bolts when changing over from one size of wheel to another. Also, the cut is always parallel to the faceplate whether the tool slide is set square or at an angle of 1 to 20. A direct reading scale can be used for ascertaining the diameter of the wheels being turned. Four rates of independently variable and reversible feeds are provided to the tool slides, and also quick-power motion controlled by joystick. The operator moves the joystick in the direction in which he wishes the slide to move, and the quick-power traverse comes into action.

All controls are conveniently placed for the operator when standing on the platform, and loading and unloading have been carefully studied, the rear of the machine between the headstocks being quite open.

The maximum diameter of wheels turned over the tread is 78 in. and the minimum 36 in. The gauge of wheels admitted is 5 ft. 6 in. and the diameter of the faceplate 80 in. This machine is known as type D, and is made in three other sizes for wheels up to 54 in., 66 in. and 90 in. diameter, in the single and general purpose types.

JUBILEE OF THE MERSEY RAILWAY

This railway completes today fifty years of public traffic. It was promoted as a pneumatic line, opened with steam locomotives, and converted in 1903 to electric traction

TODAY (January 31) the Mersey Railway completes 50 years of public traffic, for it was on February 1, 1886, that steam trains began regular work in linking Liverpool and Birkenhead. In the early years of the century electric traction replaced steam, and the change-over quickly justified itself. Now, at the beginning of its second half century, the Mersey Railway is entering on a new sphere of usefulness through the proposed electrification of the L.M.S.R. Wirral lines and through running between the two systems. Brief details of these plans were published on page 125 of our issue of January 17.

From the early years of last century attention was given to methods for improving communication across the broad estuary of the Mersey which separated Liverpool from the growing town of Birkenhead, and as we pointed out briefly on page 93 of our January 17 issue, a scheme for a railway was propounded as early as 1825. The text of a newspaper paragraph published on March 1 of that year was as follows:—

> It is in contemplation to form a ground tunnel under the Mersey, one end of which is to join the intended termination of the Liverpool & Birmingham Railroad Company,* on the Cheshire side of the river. The subject is under consideration by the committee of the Birmingham Railway. The establishment of such a mode of communication between the opposite banks of the river would be fraught with many advantages; among which may be enumerated a safe and direct communication for carriages, stage-coaches, &c., with Chester and North Wales; the facility with which the river may be crossed for every purpose, either of business or pleasure, at all hours, and at all seasons of the year.

It is hardly necessary to state that this scheme came to nothing, but the project was not lost sight of, and the growing need for an improved cross-river link eventually resulted in an influential meeting being held in December, 1865, out of which grew the Mersey Railway. At this meeting were present a number of local magistrates, town councillors, members of the Dock Board, and Birkenhead Commissioners. To this gathering Sir Charles Fox explained his plan for meeting the local needs by the construction of a pneumatic railway of a kind similar to that which had been demonstrated in the grounds of the Crystal Palace at Sydenham in September, 1864. The principle of that line, devised by Mr. T. W. Rammell, was to close each end of a tunnel with valves and to propel a train fitting this tunnel like a piston in a cylinder by means of a strong draught induced by a fan. For the return journey the fan was reversed to act as an air extractor. The cost was estimated at £300,000 and a 5 per cent. dividend was anticipated.

The project was immediately brought before Parliament and was sanctioned, the Mersey Pneumatic Railway Company being incorporated by Act of June 28, 1866 (29 and 30 Vic. cap. 139), with powers to raise a capital of £350,000 in £20 shares, and £116,600 on loan, and to build a passage 1½ miles long beneath the river Mersey connecting Liverpool and Birkenhead. The promoters did not find it easy to raise the necessary money, especially for an untried method of propulsion. A further Act, obtained on July 31, 1868, changed the name of the company to the Mersey Railway Company, and granted an extension of time for completing the works to July 31, 1873. Further Parliamentary powers of August 14, 1871, sanctioned connections with existing railways at Liverpool and Birkenhead; one year additional extension of time; £300,000 new capital and £100,000 on loan; and arrangements with the G.W.R.

During the first 13 years of its life Mersey Railway history is concerned exclusively with negotiations and Parliamentary proceedings. In September, 1876, the company issued a circular which stated, *inter alia*:—

> Preparatory to commencing the railway from Birkenhead to Liverpool, it is proposed to drive a heading or small tunnel to demonstrate the nature of the substratum and practicability of the work. This will subsequently be available for drainage, laying water pipes, telegraph wires, or other purposes. A vertical shaft has already been sunk to the formation level and the heading commenced on the Birkenhead side.

In December, 1879, work was actively taken in hand in driving a test heading, the contract for which was undertaken by Major Isaac. The experimental tunnel cost £100,000 and was finished in May, 1881; the result was entirely satisfactory. In the meantime, by Act of July 19, 1880, Parliament had extended the time for completing the works to August 14, 1883. There is little point in setting out in detail the many Acts of Parliament obtained and various increases in the authorised capital. The original contractor got into financial difficulties and the work was held up for a time, but at this stage another firm of contractors, John Waddell & Sons of Edinburgh, agreed to proceed with the work and contracted not only to complete the experimental tunnel, but also to build the full size tunnel concurrently. The work then proceeded as expeditiously as possible having regard to the many difficulties which were encountered.

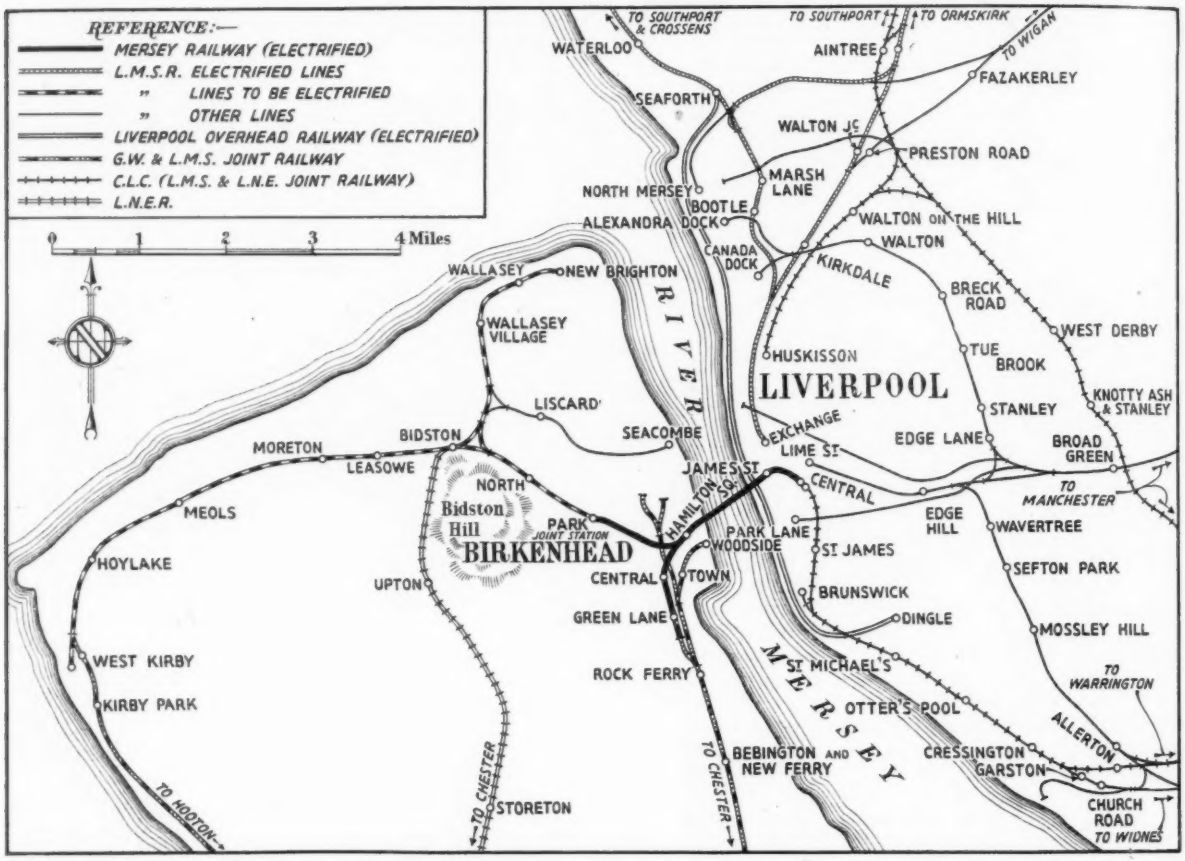
Eventually the line was completed and on January 20, 1886, was formerly inaugurated by the Prince of Wales (afterwards King Edward VII). He left Eaton Hall that morning and entrained at Chester. The special train passed over the Union Street junction from the L.N.W.R. and G.W.R. joint line to the Mersey Railway. The line thus opened extended from Green Lane, Tranmere, to James Street, Liverpool, with intermediate stations at Birkenhead Central and Hamilton Square. Public service began on February 1 with steam traction. Already plans were in hand for linking up with the little system of lines then being developed and afterwards known as the Wirral Railway. The Mersey Railway was authorised by Act of August 7, 1884, to make a branch line to join a proposed extension of the Wirral. The Mersey company's section was from Hamilton Square to Birkenhead Park station, and this was opened on January 2, 1888, on the same day that the Wirral lines were extended to an end-on junction at the latter station. This provided a direct railway from Liverpool to Wallasey, Hoylake, and West Kirby; the Wirral line from Wallasey into New Brighton was opened on March 30, 1888.

The Rock Ferry extension, which affords the Mersey

* This project had its origin in 1823 and in the following year an unsuccessful application was made to Parliament for power to construct a line from Birmingham to Birkenhead via Chester. Another application in 1826 met a similar fate and the promoters in 1832 joined with others in forming the Grand Junction Railway between Warrington and Birmingham (incorporated on May 6, 1833) which is now part of the L.M.S.R. main line.

a direct connection with the Birkenhead Joint Railway (L.M.S.R. and G.W.R.) was opened on June 15, 1891, and the extension from James Street station, Liverpool, to the Central (underground) station under the Central station of the Cheshire Lines Committee on January 11, 1892. These sections complete the Mersey Railway system as it exists today, bringing the total mileage up to 4 miles 62 chains. Many schemes were prepared in earlier years for further extensions, such as James Street to Exchange station, Liverpool, and Birkenhead Central to Storeton on the Great Central Railway, but none was built. The stations on the existing system are seven in number; three are surface stations, two are tunnel stations, a path which is lowest in the centre, but which rises towards the banks at gradients as steep as could well be negotiated successfully by steam trains, namely, 1 in 27. The main tunnel is 26 ft. in extreme width, is 19 ft. high from the track rail head to the top of the arch, and is lined throughout with brickwork set with cement. Some 38,000,000 bricks were used for this part of the work.

The railway is provided with an adequate drainage system, and, although the pumps deal with thousands of gallons of water every 24 hours, the railway tunnel is remarkably dry. The water which gives work to the pumps is drawn only from the drainage tunnel to which it has percolated from the surrounding rock. The purpose



Sketch map of the Mersey Railway and adjacent lines, showing the L.M.S.R. section in the Wirral peninsula which is to be converted to electric traction, with through running into Liverpool over the Mersey system

one is an underground station with a steel girder roof (under Liverpool Central main line station), and one station is partly of tunnel and partly surface construction. The average length of the platforms is 400 ft. and the width about 18 ft.

The Mersey Railway includes in all three tunnels below the river; the railway tunnel proper, a ventilation tunnel, and a tunnel for the drainage system. The two auxiliary tunnels are not independent throughout their entire length, they join together for some distance and run as one for a short distance at about the centre of the cutting. Both tunnels below mid-stream are practically on the same level, but at their banks their divergence is very considerable, due to the necessity of having to drain the water downwards on each side from the centre in the case of the drainage tunnel, whereas the railway tunnel follows is to keep the enveloping strata in a drained condition and thus protect the main tunnel. Incidentally, the inhabitants of Birkenhead bathe in the public baths in water which the Mersey Railway has drawn from below the bed of the river.

Although this railway began by being well patronised, it never became successful financially during its days of steam traction. The trouble inseparable from a long tunnel in which frequent steam trains were run, prevented its development, and the atmosphere became more foul as the years passed. In spite of a battery of both 30 ft. and 40 ft. diameter fans, examples of the latest type of mine ventilating equipment and capable of ejecting over one million cubic ft. of obnoxious gases a minute from the tunnel, with a consequent equivalent influx of fresh air, the atmosphere in the James Street and Hamilton

Square stations was far from desirable. The working expenses for ventilation were heavy. At the beginning of this century, in spite of drastic economies, the line was being run at a loss. It was thus evident that drastic steps must be taken, and it was decided to adopt electric traction.

The company made application to Parliament for powers for electric working, and these were duly granted by Act of July 30, 1900. In July, 1901, the company entered into a contract with the British Westinghouse Electric & Manufacturing Co. Ltd. (now the Metropolitan-Vickers Electrical Co. Ltd.) for the complete electrification of the whole system. This was the first example of an English steam line being converted to electric traction. The system adopted was 650 volts d.c., power was collected from a 100 lb. outside third rail and returned through a centre rail; the whole of the permanent way was relaid at the time of conversion. The rolling stock comprised 24 motor-coaches and 33 trailers, a total which has been increased since to 28 motor-coaches and 40 trailers. A rolling stock modernisation programme is now in course of execution. The original motor coaches were powered by four 100 h.p. motors, controlled on the electro-pneumatic system by a drum-type controller. In 1923-24, five new motor coaches with four 125 h.p. motors were put into service.

Mersey Railway train at Birkenhead Park

One of the principal works of the electrification was the construction of a power station with a traction capacity of 3,700 kW. which was erected at Shore Road, Birkenhead, and this also supplied power for the electric lighting of the stations and for the operation of the lifts. On Sunday, May 3, 1903, at 12.15 a.m. the last steam passenger train left Liverpool Central, and at 6.0 a.m. on the same day the running of electric trains to a schedule speed, including stops, of 20·5 m.p.h., was begun. The railway has since been operated entirely by electric traction.

The electric rolling stock described above replaced 18 six-coupled tank engines of notable proportions. For the opening, Beyer Peacock built nine 0-6-4T locomotives, known as Class I, which had inside cylinders 21 in. by 26 in., 4 ft. 7 in. coupled wheels, and a working pressure of 150 lb. The weight in working order was 68 tons, of which 51½ tons were on the coupled wheels. In 1887, the same builder delivered the six 2-6-2T engines of Class II, which had outside cylinders 19½ in. by 26 in., 4 ft. 7 in. wheels, a working pressure of 150 lb., and a weight of 62½ tons. Class III consisted of three generally similar 2-6-2T engines delivered by Kitson in 1892, the feature of which was an extended smokebox containing an American form of spark arrester. This, and other slight modifications, brought the weight up to 67½ tons. A water jet was applied to the radial wheels at each end to lessen the grinding action on the sharp curves. Originally, all the Mersey engines were named, but the nameplates were taken off before the close of the nineteenth century. The average load in the early years consisted of eight four-wheeled carriages taring 80 to 85 tons.

Signalling

The signalling originally introduced was of the then almost universal mechanical type, with a signal box at each station and signals on the platforms, and the additional safety afforded by Sykes lock-and-block. It was then decided to substitute automatic signalling in the area between Liverpool Central (Low Level) and Hamilton Square, a distance of 1 m. 70 ch., which includes the under-the-river section, with ascents as steep as 1 in 27 on the Liverpool side and 1 in 30 on the Birkenhead side. The contract for the work was placed with the McKenzie, Holland & Westinghouse Power Railway Signal Company, one of the predecessors of the present Westinghouse Brake & Signal Company, and the installation was opened on November 13, 1921. It was described in THE RAILWAY GAZETTE of July 21, 1922.

The next feature was quite a new departure in railway signalling, and was due to the ingenious activity of Mr. Joshua Shaw, the railway company's manager and engineer, assisted by the engineers of the signal contractors. Liverpool Central is a terminal station, and the main lines were extended as sidings beyond the end of the platform into the tunnel that had been used in the construction of the railway. The extension of the up line is normally used as an empty carriage siding, and the corresponding extension on the down side is used as a run-round for reversing up trains by passing them through a crossover-road. In this process an arriving train opens the crossover, and after running into the extension, reverses it and opens a trap point in the down line between the crossover and the end of the down platform. When the train has again to leave the siding, the siding points are already in position, and the reversal of the crossover, provided that the down platform and the overlap beyond the starting signal are clear, allows the train to leave its extension and to enter the down platform. When this system was inaugurated on February 4, 1923, the signal box A at that end of the station was closed. The economies thus effected led to the crossover road at the other end of the station, that allowed up trains, after using the station, to leave again for Birkenhead, being similarly worked by a track circuit in the up line at the Birkenhead end, and this allowed signal box B to be out of use at various times.

In addition to being the pioneer conversion of a steam railway to electric traction, the change-over on the Mersey Railway has been attended by results which exemplify in an outstanding manner the advantages of electricity as the motive power for this type of service. As we pointed out in an editorial note on page 93 of our issue of January 17, the 1934 balance sheet of the company shows that approximately 17½ million passengers were carried during the year and that there was a revenue surplus of £90,549; these figures compare with 6·65 million passengers and a deficit of £4,086 for 1902 which was the last complete year of steam working.

(*See portraits and biographies on page* 216)

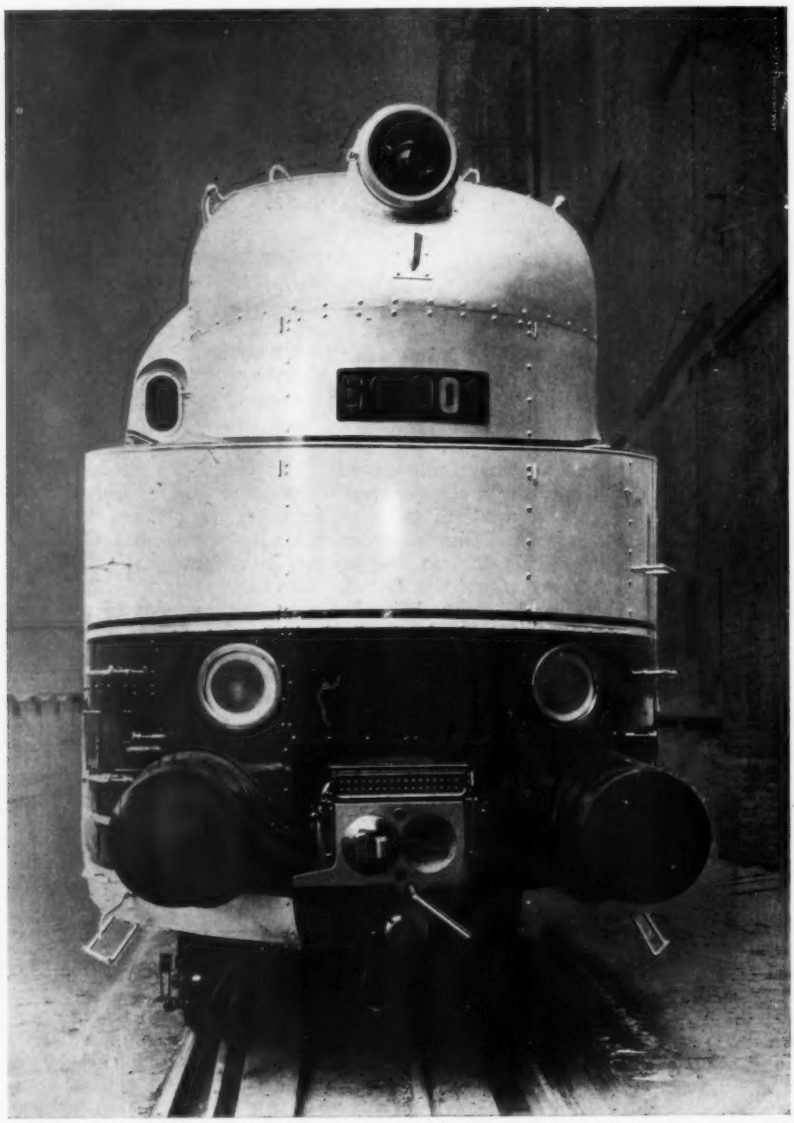
CZECHOSLOVAK GOODS TRAFFIC IMPROVEMENT.—The freight traffic returns of the Czechoslovak State Railways for 1935 show a further moderate improvement, the carloadings for the year totalling 4,637,863, compared with 4,479,823 in 1934. The improvement is due entirely to an increase in home traffic, the loadings for export trade having dropped slightly from 349,712 in 1934 to 327,000 in 1935. Consignments of coal, on the other hand, registered a slight increase, from 1,065,098 to 1,068,000.

AUTOMATIC COUPLINGS FOR LOCOMOTIVES AND ROLLING STOCK

Details of the Scharfenberg coupler, which possesses certain distinctive features that have proved highly efficient in service

THE ordinary type of screw coupling worked in conjunction with side buffers, as generally used in Europe, is well-known to have certain disadvantages; the same applies to automatic claw couplers, their serious drawback being the slackness or play between the coupled heads. To overcome the objections to both types, there was introduced some time ago the automatic Scharfenberg coupler, known as the Schaku; which has since been applied under varying conditions in Germany and other countries.

The coupler is of the tight-lock type, and its use practically eliminates play between the coupler heads, the result being that wear and tear of the heads as well as of the coupling members is exceedingly small, whilst disagreeable shocks when starting and braking, having their origin in the play between the claw couplers, are avoided. A feature of importance is the structural simplicity of the coupling mechanism, and also the simple and therefore reliable mode of operation. When two couplers meet, the vehicles are coupled up automatically, and coupling is effected always with the same degree of security from the lowest up to the highest allowable speed in shunting service. The wagons are uncoupled from the side, whilst in the case of railcars and ordinary types of passenger vehicles, disengagement is by means of a release valve suitably located on the vehicle. It is sufficient to operate only one coupler, the mechanism in the other head being released simultaneously, because the coupling members in both heads act in unison. After the separation of the vehicles, both couplers are again ready for re-engaging. A clearly important feature is that the coupler is always ready for re-engagement, and consequently the destruction of the coupling members becomes almost impossible. This is not the case with the American claw couplers, or with most of the other rigid couplers.



Scharfenberg coupler applied to the Henschel streamlined express locomotive

The brake pipes end within the coupler head and are connected automatically with each other when coupling up the vehicles. Manual operation of the stop cocks for the air pipes is unnecessary, it being possible in a very simple manner to operate the stop cocks directly by means of the coupling mechanisms, so that the cocks are opened when coupling, and closed when uncoupling. Electric and heating pipe connections can be coupled up simultaneously. The gangway bellows and the gangways on passenger vehicles are engaged automatically, so that really all parts on the ends of the vehicles, which formerly had to be connected by hand, are now coupled up automatically.

The couplers of two cars form, in effect, a rigid bar, so that in case of accident the danger of telescoping is largely diminished, this having been proved by experience. The running qualities of the vehicles are improved by a special mounting of the coupler in the underframe. The distance between the vehicles can be restricted to the minimum which is necessary for rounding curves; for example, the distance between the locomotive and the vehicle on the new 175-km.p.h. streamlined steam train of the German State Railway is reduced to about

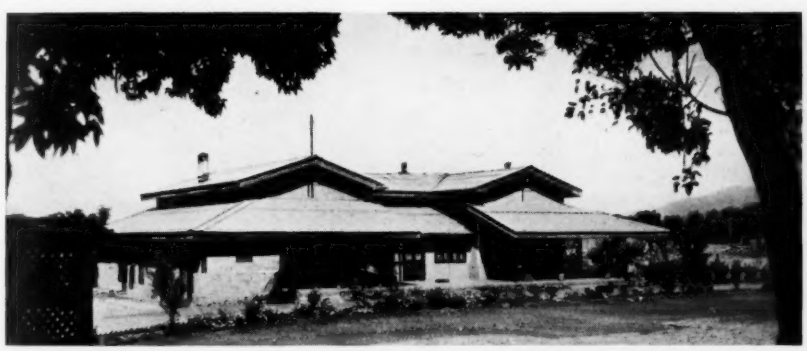
Application of coupler to German coal wagons

As used on electric suburban passenger train

9½ in. In this way reduction of air resistance and shortening of train units are attained. If the closest possible coupling between vehicles is desired, a fully-automatic coupler is indispensable because of lack of space to connect all fittings between the vehicles by hand.

The Schaku coupler has furthermore a much greater gripping sphere than the well-known claw couplers and other rigid couplers, and therefore the reliable engagement of the heads even on the sharpest curves is ensured.

The Schaku central buffer coupler is extensively used on special services of the German State Railway, for example, on suburban lines, and for high capacity hopper wagons, also on the narrow gauge lines of Saxony. The coupler is also fitted to the latest streamlined high-speed railcars. The application of this coupler on underground railways has also proved very advantageous. Railways in Austria, Greece, Holland, Norway, Poland, and Spain now use the Schaku coupler. An important feature is that this automatic coupler can be used in conjunction with ordinary screw couplings or with claw couplers, either by turning down the automatic coupler or by use of a loose intermediate coupler.



Earthquake-Resisting Structures

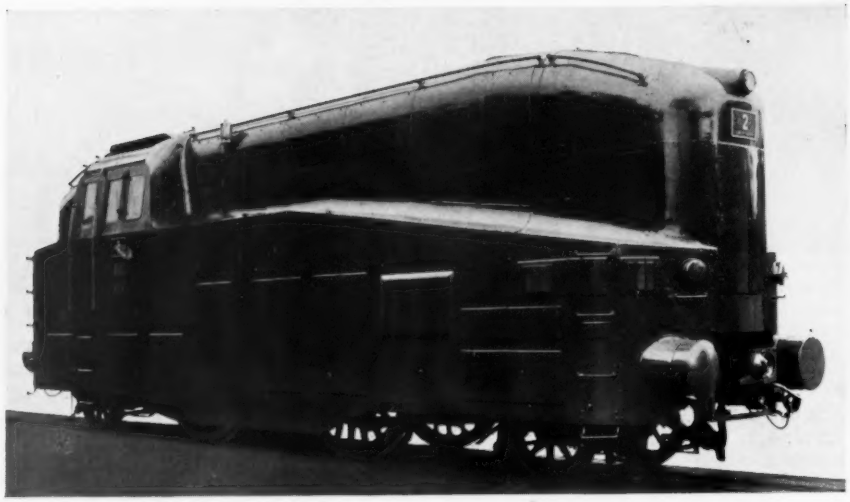
(*see page* 197)

Left: Officer's bungalow at Quetta specially designed and built to resist earthquake shocks, as it appeared after the great earthquake last year, though situated in the midst of an otherwise completely devastated area

Reinforced concrete box-type 12-ft. span bridge being built near Quetta. Left: abutments completed and shuttering for wing walls being erected. Right: wing walls being cast; note buttressed brickwork shuttering for wings and abutments made of bricks recovered from old damaged bridge

NEW GERMAN 2-4-2 STREAMLINED TANK LOCOMOTIVES

Built by Henschel & Sohn A.G., Kassel, for the Lübeck-Büchen Railway



End view showing Scharfenberg coupler

IN order that the advantages of rail motor trains—principally in regard to readiness for service, easy reversibility, and simplicity of working—may be combined with greater seating capacity, the Lübeck-Büchen Railway Company decided recently to carry out trials with reversible or push and pull trains each consisting of a double-deck articulated coach built by the Linke-Hoffmann Werke A.G., Breslau, and the Wumag Waggon und Maschinenbau A.G., Görlitz, hauled by a 2-4-2 superheated tank locomotive built by the firm of Henschel & Sohn A.G., Kassel. The double-deck coaches which are at present under construction, are of streamlined form and mounted on three bogies as indicated by the general arrangement drawing, Fig. 2. Two of these trains are under construction, each designed for a maximum speed of 120 km. (74·6 miles) an hour in either direction of running. Loss of time in uncoupling and running round at terminals will thus be avoided, and when running with the locomotive behind, the train will be controlled from a driver's compartment at the front of the leading coach, using electrical remote control gear supplied by the firm of H. Becker, Berlin.

The leading dimensions are as follow:—

Cylinders—Diameter	400 mm. (15¾ in.).
,, Stroke	660 mm. (26 in.).
Coupled wheels, diameter	1,980 mm. (6 ft. 6 in.).
Leading and trailing wheels, diameter	1,000 mm. (3 ft. 3⅜ in.).
Boiler working pressure	16 at. (227 lb. per sq. in.)
,, heating surface, fire side	75·4 sq. m. (811 sq. ft.)
,, ,, ,, superheater	26·0 sq. m. (280 sq. ft.).
Total	101·4 sq. m. (1,091 sq. ft.).
Grate area	1·4 sq. m. (15·1 sq. ft.).
Wheelbase—Rigid	3,000 mm. (9 ft. 10⅛ in.).
,, Total engine	8,750 mm. (28 ft. 8½ in.).
Weight of engine in working order	69·0 metric tons (67 tons 18 cwt.).
Adhesion weight	36·5 metric tons (35 tons 18 cwt.).
Water capacity	9·3 cu. m. (2,046 galls).
Fuel capacity	3·5 metric tons (3 tons 9 cwt.).
Tractive effort (at 75 per cent.)	6,400 kg. (14,110 lb.).

The maximum axle load is 18·5 metric tons (18 tons 4 cwt.) and the locomotive is capable of traversing curves of

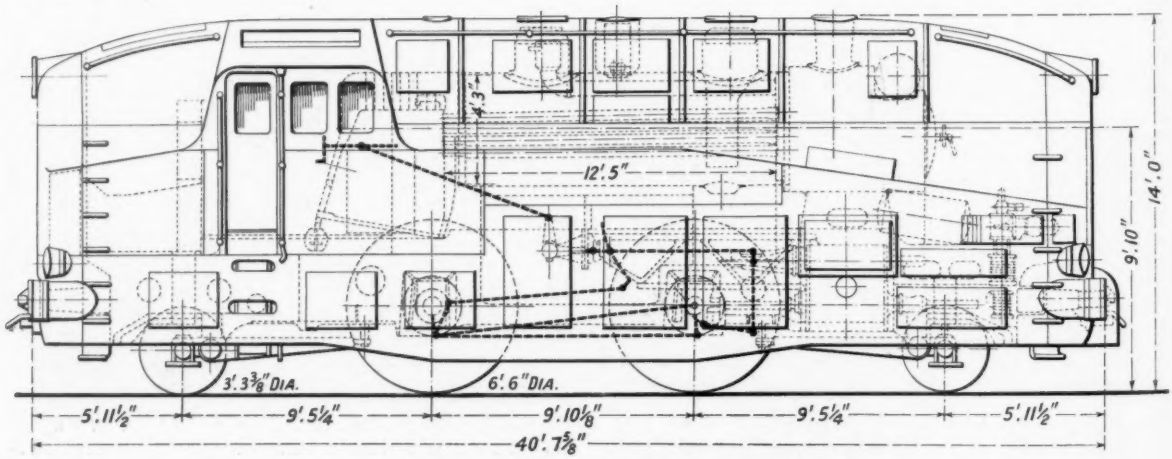


Fig. 1—General arrangement of the locomotive

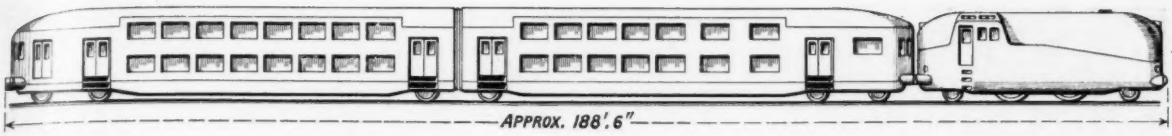
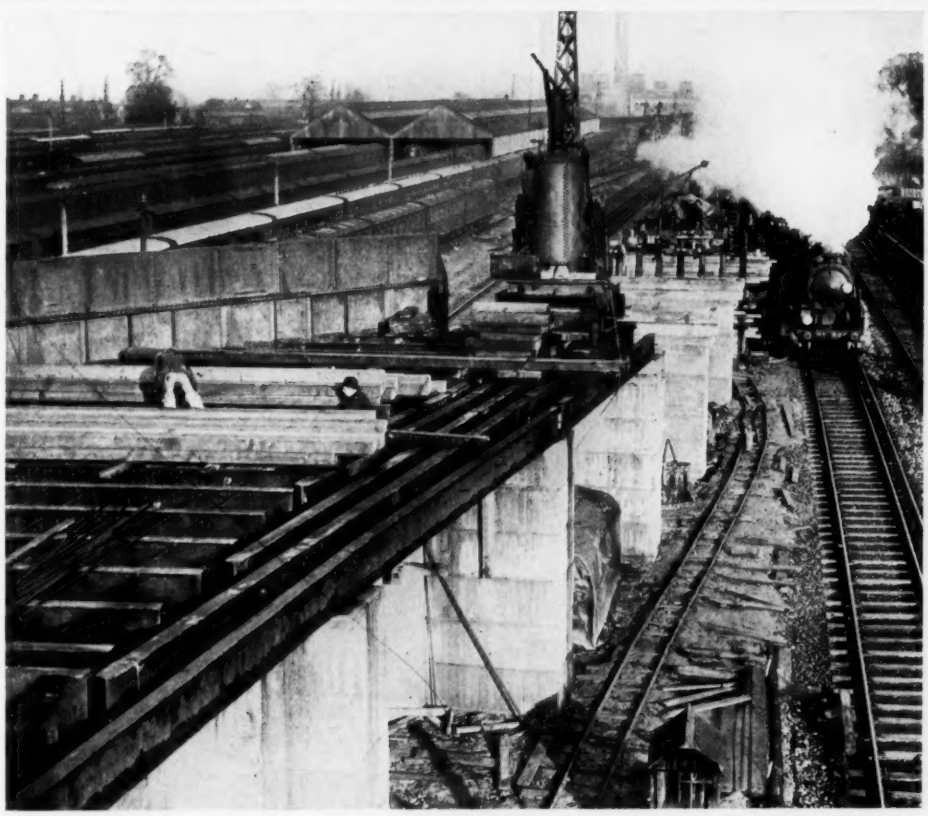


Fig. 2—Locomotive and double-deck articulated coach forming complete unit

140 metres (459 ft.) radius. Numerous doors in the streamline casing provide easy access to all parts requiring attention. It is expected that the general construction of these trains, together with the provision for driving from either end, will enable them to be operated as easily as railcars and for similar classes of service with, of course, the advantage of high seating capacity.

The new trains may be regarded as a logical extension of principles applied in the construction of the first steam railcar for the Lübeck-Büchen Railway, which began its trials on January 1, 1934 (THE RAILWAY GAZETTE, June 1, 1934, page 964), and the 120 h.p. steam-motor locomotive built last year for shunting service. By its latest innovation, the Lübeck-Büchen Railway Company is again demonstrating its continued enterprise in the development of steam traction.



Above: A view of the Southern Railway lines just east of Clapham Junction (Central Section on right of gantry). The replacement of the semaphore signalling with colour-lights is part of the work to be undertaken in the improvement scheme referred to in an editorial note on page 191

Right: the Wimbledon flyover (also mentioned in the above note) under construction, which is being carried out without curtailment of train service

The body of the late King George V arriving at King's Cross Station, L.N.E.R., on Thursday, January 23. The simple ceremony was remarkable for its impressive silence

The royal coffin being carried into the funeral train at Paddington, G.W.R., on Tuesday last en route for Windsor

(*See news article on page* 222)

RAILWAY NEWS SECTION

PERSONAL

Monsieur Surleau, Ingénieur en Chef des Ponts et Chaussées, Chief Engineer, Way and Works, of the French State system, who, as announced in our issue of January 10, has been appointed General Manager of the Alsace-Lorraine Railways, gained his earliest experience on railway construction work first in France and then, for six years, in the Colonies. In 1919 he was transferred to the Engineer's Department of the State Railways, where he had charge successively of the La Roche-sur-Yon, le Mans, Paris-Rive Droite, and Paris-Montparnasse districts, before being promoted to be Assistant to the Chief Engineer on January 1, 1927. In July, 1927, he was appointed Assistant Chief Engineer and in November, 1929, became Chief Engineer, Way and Works. M. Surleau has subsequently been in charge, under M. Dautry, of numerous equipment and improvement works, including the reconstruction of many important stations, the resignalling in the suburbs of Paris and between Caen and Cherbourg, and the remodelling of big marshalling yards, locomotive depots and workshops. He was also in charge of town planning, and was President of the Social Works Committee of the system. He also helped M. Dautry in the preparation and execution of the big works programme to combat unemployment. Since 1927, M. Surleau has been a member of the Colonial Public Works Committee at the Colonial Office, and in this connection was concerned particularly with the reorganisation of the Madagascar railways. At the present time he is President of the railway sub-committee at the Colonial Office.

Monsieur Surleau,
Appointed General Manager,
Alsace-Lorraine Railways

Mr. Y. Matsuoka,
Who was recently appointed President,
South Manchuria Railway

Mr. Y. Matsuoka, who, as announced in our issue of August 9 last, has succeeded Count Hayashi as President of the South Manchuria Railway Company, seemed until recently, destined for the highest posts his country's diplomatic service could offer. He completed his education at the State University of Oregon, U.S.A., and entered the Japanese Diplomatic Service in 1904. Ten years later he became Second Secretary of the Legation at Peiping (Peking), and at an unusually early age became Consul-General at Shanghai. He then abandoned a diplomatic for a political career, becoming a Director and Vice-President of the South Manchuria Railway and a Member of the Diet. In 1932 he personally represented the Prime Minister in Shanghai during hostilities there, and later went to Geneva as Chief Japanese Delegate to the League of Nations. Although he put up a brilliant defence of Japanese policy in Manchukuo, the Lytton report received the approval of the League and Japan resigned. It is believed in some circles, however, that, had he been sent to Geneva when the League took up the Manchurian question and not at the last moment, his brilliant oratory in European languages and inherent knowledge of Manchukuo might have turned the scales in favour of Japan. Mr. Matsuoka is now in control of a combined 5,000-mile railway, 2,900-mile bus and 3,700-mile

steamship transport undertaking, and of some 70 subsidiary concerns, such as steel and aluminium works, refineries, mines, cement, flour and gas works steamships, power stations, forestry, insurance and hotels.

On pages 197 and 198 will be found a summary of the route mileages of the S.M.K. and State railways, buses and steamships together with a map, and also an outline of the reorganisation of the State lines on the divisional system. On page 217 also, are announced the personal appointments to the new divisional charges, and the names of the members of the S.M.R. board of directors as now constituted, under Mr. Matsuoka's presidency.

Mr. C. M. Jacobs, who, as announced in THE RAILWAY GAZETTE of December 6, is retiring on February 1 from the

Photo by [*Vandyk*

Mr. John Waddell, J.P.,

Chairman of the Mersey Railway since 1931

position of Signal Engineer, G.W.R., entered the Telegraph Department of that railway at Hereford Barton in 1882. In October, 1887, he was transferred to the chief office of that department under the late Mr. C. G. Spagnoletti, and in August, 1896, was appointed Technical Assistant to the late Mr. Goodenough. On the amalgamation of the Telegraph and Signal Departments in 1903, he became Electrical Assistant to the Signal Engineer, Mr. A. T. Blackall, upon whose retirement in June, 1923, he succeeded Mr. R. J. Insell as Assistant Signal Engineer. In May, 1928, Mr. Jacobs succeeded the late Mr. R. J. Insell as Signal Engineer of the system, the position from which he is now retiring. Mr. Jacobs was a Vice-President of the Institution of Railway Signal Engineers. In 1913 he was one of a small delegation sent to the United States to report on American signalling practice, and in 1918 he read a paper on electrical signalling before the Institution of Electrical Engineers. On his own account, and in conjunction with others, Mr. Jacobs has invented, and helped in the development of, various telephone and signalling apparatus and systems, some of which are in extensive use, including the electrical

Mr. C. M. Jacobs,

Signal Engineer, Great Western Railway, 1923–36

Mr. P. Boyle, M.B.E.

Traffic and Marine Agent, Weymouth, G.W.R., 1914–35

control of engineering occupations on single lines, the Great Western Railway system of automatic train control, and the electric key-token instrument which has been adopted as the Great Western standard single-line instrument. (See also editorial note on p. 193.)

Mr. John Waddell, J.P., who is Chairman of the Mersey Railway, was educated at Cargilfield and Edinburgh Academy, and from 1898 to 1900, and from 1900 to 1907 was respectively with John Brown & Company, mechanical engineers, Leith, and Thomas Meik & Sons, civil engineers, Edinburgh and London. With them he was engaged upon various engineering works including the construction of railways, docks and waterworks. From 1907 to 1923 he was Resident Director, and subsequently Managing Director, Great Mountain Colliery, Llanelly, until its amalgamation with Amalgamated Anthracite Limited, when he joined the board of that company. From 1907 onwards Mr. Waddell was also General Manager and Engineer of the Llanelly & Mynydd Mawr Railway until its absorption by the Great Western Railway in 1922. He was elected a Director of the Mersey Railway in August, 1919, and became Chairman on April 30, 1931.

Mr. Waddell's family has been continuously associated with the Mersey

Mr. J. Shaw,

General Manager, Engineer and Secretary, Mersey Railway since 1908

Railway for 55 years, as the firm of John Waddell & Sons contracted with the railway to drive an experimental heading under the Mersey in 1881, and on its completion the main tunnel also. After the death of Mr. John Waddell (grandfather of the present Mr. Waddell) his son George became head of the firm, and the construction of subsequent extensions was carried out under him. On the completion of these works, Mr. George Waddell joined the board of the Mersey Railway in 1893, a position he occupied until his death in 1919, when his son, the present Chairman, took his place.

Mr. Joshua Shaw, M.Inst.C.E., M.I.Mech.E., M.I.E.E., General Manager, Engineer and Secretary of the Mersey Railway, was educated at the Central School and Owens College, Manchester, and joined Mather & Platt, engineers, Manchester, as an apprentice in 1887. He was appointed Engineer of the Isle of Man Tramways

in 1894; General Manager, Engineer, and Secretary of the Isle of Man Electric Tramways in 1899; Consulting Tramways Engineer, Douglas Corporation, in 1902; and Engineer of the Mersey Railway when a start was made with the conversion from steam to electric traction in 1902. It was in 1908 that he was appointed General Manager, Engineer, and Secretary.

Mr. P. Boyle, M.B.E., who, as recorded in THE RAILWAY GAZETTE of January 3, has just retired from the position of Traffic and Marine Agent, Weymouth, G.W.R., joined that railway as a junior clerk at New Milford (Neyland, Pem.) under the Marine Superintendent, in 1883. Six years later when the Weymouth-Channel Islands service was taken over by the Great Western from the W. & C.I. Steam Packet Company, Mr. Boyle was selected to accompany the Deputy Marine Superintendent to Weymouth. In 1914 he was promoted to the position of Traffic, and later of Traffic and Marine, Agent there. He was also appointed Lloyd's Agent and was, moreover, a Sub-Commissioner of Pilotage under Trinity House, and Vice-Consul for Belgium in Dorset. It was during the war too, that he was a Stamper of Steel and Shells for the Army and was awarded the M.B.E. for these and other war services. In 1924 Mr. Boyle became a member of Weymouth Town Council, was elected Mayor in 1928 and was re-elected in 1929. During his agency many improvements have been effected not only at Weymouth but also in the harbours and approaches to Jersey and Guernsey. The Guernsey Growers Association presented him with a silver salver for special services during the General Strike, and with a silver tray on his retirement, and the Bailiff of that island, on behalf of his friends there, presented him with a silver cigar box inscribed with their autographs, at a dinner in his honour on January 6.

G.W.R. APPOINTMENTS

The directors of the Great Western Railway have approved the following appointments:—

Mr. J. F. Arthur, Chief Assistant Dock Mechanical Engineer, Cardiff, to be Dock Mechanical Engineer, Cardiff.

Mr. J. A. Denney, Assistant Divisional Engineer, Bristol, to be Divisional Engineer, Oswestry.

Mr. A. Lane, Clerk, Solicitor's office, Paddington, to be Assistant Chief of Police, Paddington.

Mr. H. Bolton, Clerk, District Goods Manager's office, Bristol, to be Chief Clerk, in that office.

Mr. R. A. Sims, Goods Agent, Oxford, to be Chief Clerk, District Goods Manager's office, London.

Mr. L. M. Sharp, Assistant Marine Engineer, Chief Docks Manager's office, Cardiff, to be Superintendent Engineer, Chief Docks Manager's office, Cardiff.

Mr. C. A. Neale, Assistant Divisional Engineer, Gloucester, to be Assistant Divisional Engineer, Bristol.

Mr. T. C. B. Davies, Assistant, Divisional Engineer's office, Wolverhampton, to be Assistant Divisional Engineer, Gloucester.

Mr. G. Thomas, Assistant, Divisional Engineer's office, Taunton, to be Assistant, Divisional Engineer's office, Wolverhampton.

Mr. J. L. Roach, Senior Surveyor and Draughtsman, Divisional Engineer's office, Newport, to be Assistant, Divisional Engineer's office, Taunton.

SOUTH MANCHURIA RAILWAY BOARD

Under the new President, Mr. Y. Matsuoka,* the management of the various departments of the South Manchuria Railway has been reorganised and each director is now responsible for one or more departments as follow:—

Mr. T. Ohmura, new Vice-President, is in charge of the Planning Department,

Mr. M. Obuchi, Director, of the Tokyo offices,

Col. D. Komoto, Director, of the Economic Research Department,

Mr. M. Yamasaki, Director, of the General Affairs Department,

Mr. S. Koriyama, Director, of the Sales and Supplies Department,

Mr. K. Sasaki, Director, of the Finance and Audit Department,

Mr. K. Usami, Director, of the Railways Department, the State Railways Bureau, and the North Chosen Railway Bureau.

Mr. O. Satoh, Director, of the Railway Construction Department, and the Fashun Collieries,

Mr. K. Ishimoto, Director, of the East Asiatic Bureau, including all branches in China.

Messrs. Ohmura, Satoh and Ishimoto are newcomers to the board.

Mr. Takuichi Ohmura, who was recently appointed Vice-President in succession to Mr. Yoshiaka Hatta, who resigned, was born in 1872, and was educated at the Sapporo Agricultural College in Japan. After graduation he entered Government service; he was a member of the International Committee which managed the Chinese Eastern Railway for some years after the war, and in 1925 he became Chief of the Chosen Government Railway Bureau. In December, 1934, he was appointed Chief Superintendent of the Communications Department of the Kwantung Army Headquarters in Hsinking, which post he held until his appointment as Vice-President, S.M.R.

Mr. Ojiro Satoh was born in 1881, graduated from the Tokyo Imperial University, and joined the S.M.R. in 1907. He held various positions, and was appointed a Director in July, 1935.

Mr. Kenji Ishimoto was born in 1889, graduated from the Tokyo Imperial University, joined the S.M.R. in 1920, and was appointed Director at the same time as Mr. Satoh.

In connection with the reorganisation of the Manchukuo State Railways, outlined on page 198, Messrs. K. Usami and M. Izawa remain as General Manager and Deputy General Manager respectively. To the newly-created divisions the following appointments have been made:—

Division	Superintendent	Deputy Superintendent
Mukden ...	Mr. K. Ota	Mr. Chao Hsin-che
Kirin ...	Mr. Chin Pi-tung	Mr. S. Nishikawa
Harbin ...	Mr. K. Sahara	Mr. Fan Chi-kuang
Tsitoihar...	Mr. Chou Pei-ping	Mr. H. Nonaka

Mr. H. Nonaka, who until now has been Chief Mechanical Engineer of the South Manchuria Railway, joined that system in 1913 as a junior engineer in the Mechanical Engineer's Department, and steady promotion followed, until in 1929 he was appointed Works Manager of the company at Shakako. In 1932 he was promoted to be Chief Mechanical Engineer. His outstanding work has been the design of the streamlined steam locomotives for the Asia express trains, the streamlined tank engines for short distance fast trains and diesel electric trains, described in THE RAILWAY GAZETTE on page 205 of this issue and in the *Diesel Railway Traction Supplement* of April 19, 1935.

Mr. T. Kimura, his chief assistant, has been appointed as Mr. Nonaka's successor.

NEW G.W.R. DIRECTORS

The Rt. Hon. the Earl of Dudley, M.C., D.L., J.P., and Col. Sir W. Charles Wright, Bart., K.B.E., C.B., have been elected Directors of the Great Western Railway.

Lord Dudley has extensive interests in the iron and steel and coal industries. He is President of the Iron and Steel Federation and, in this capacity, took a leading part in the recent discussions for the establishment of an iron and steel cartel. He is a Director of the British Iron and Steel Corporation, which was formed to implement the cartel agreement, and is also Chairman of the Earl of Dudley's Round Oak Works Limited.

Sir Charles Wright has been connected with the iron and steel and tinplate industry in South Wales and the Midlands throughout his life. In 1932 and 1933 he was President of the Iron and Steel Institute. He is Chairman of Baldwins Limited and also of Guest Keen Baldwins Iron and Steel Co. Ltd.

Mr. Raymond A. Burke, D.L., has been co-opted a Director of the Great Northern Railway Company (Ireland), in place of the late Lt.-Col. J. C. W. Madden, whose death we announced in our issue of January 10.

Sir John Field Beale, K.B.E., formerly a Director of the L.M.S.R., whose death we announced in our issue of December 13, left estate valued at £35,726 (£21,896 net).

We regret to record the death, on January 24, of Sir William Barclay Peat, the Chairman of Robert Stephenson & Co. Ltd., and for 32 years head of the firm of W. B. Peat & Company, chartered accountants. See editorial note on page 190.

* Whose portrait and biography are on page 215.

Railway Speed Development in 1935

I—Great Britain and Ireland

By CECIL J. ALLEN, M.Inst.T.

In the short series of articles, of which the present is the first, the changes in railway speed which have taken place during the past year will be brought under review. It need hardly be emphasised that the great majority of these changes have been in an upward direction. With diesel propulsion the world's first schedules in excess of 80 m.p.h. from start to stop have been brought into operation; with steam the level of achievement has now risen to timings of 75 m.p.h. from start to stop; and electricity can now show bookings of all but 70 m.p.h. from start to stop. The greatest speed advances during 1935 have been made in Germany and the United States; in Germany, in particular, the speed of "D" class trains, where conditions of grading and curvature permit, has risen to a general standard of 58 to 61 m.p.h. between stops, with higher speeds on "FD" services, and very much higher speeds, still with the "FDt" railcar services. These articles are concerned chiefly with the runs booked from start to stop at 60 m.p.h. and over, and the summary of the mileages scheduled at these speeds will distinguish between steam, diesel or other type of internal combustion engine, and electric haulage.

In the present article the high speed services of Great Britain are reviewed, and Table A shows the runs made by individual railways from start to stop at speeds of 58 m.p.h. and over. The most notable among the new schedules introduced during 1935 were those of the L.N.E.R. Silver Jubilee (70·4 m.p.h. in each direction over the 232·3 miles between King's Cross and Darlington), and the G.W.R. Bristolian (67·6 m.p.h. over the 118·3 miles from Paddington to Bristol via Bath, and 67·2 m.p.h. in the reverse direction over the 117·6 miles via Badminton). Actually the fastest run in Great Britain, calculated on a start to stop basis, still remains the Cheltenham Flyer of the G.W.R., booked at 71·4 m.p.h. over the 77·3 miles from Swindon to Paddington; but the Silver Jubilee of the L.N.E.R., on the down journey, is scheduled to cover the 156·7 miles between Hatfield and Selby, pass to pass, in 125½ min., at 74·9 m.p.h. Other G.W.R. additions of note during 1935 to this table were the 63·4 m.p.h. run from Chippenham to Paddington of the 7.50 a.m. from Bristol, an additional 60-min. run from Oxford to Paddington (63·5 m.p.h.), and on the L.M.S.R. the 65·1 m.p.h. run from Rugby to Watford of the 6.20 p.m. express from Birmingham to Euston, as well as the 5 min. cut made in the times of a number of the Euston-Birmingham two-hour services, which has produced a crop of additional runs

TABLE A—RUNS TIMED ON BRITISH RAILWAYS AT OVER 58 M.P.H. FROM START TO STOP. WINTER 1935–1936

Railway and Section	From	To	Train	Distance	Time	Speed
				miles.	min.	m.p.h.
G.W.R.	Swindon	Paddington	3·55 p.m.	77·3	65	71·4
	Paddington††	Bristol	10·00 a.m.	118·3	105	67·6
	Bristol‡‡	Paddington	4·30 p.m.	117·6	105	67·2
	Oxford	,,	10·10 a.m. 5·35 p.m.	63·5	60	63·5
	Chippenham	,,	8·28 a.m.	94·0	89*	63·4
	Paddington	Bath	11·15 a.m. 1·15 p.m.	106·9	102	62·9
	Kemble	Paddington	9·02 a.m.	91·0	88*	62·0
	High Wycombe	Leamington	9·44 a.m.†	60·8	59*	61·8
	Paddington	Exeter	10·30 a.m. 12·00 noon	173·5	169*	61·6
	,,	Taunton	1·40 a.m.	142·7	139*	61·6
	Swindon	Paddington	1·14 p.m.	77·3	76	61·0
	Paddington	Kemble	5·00 p.m.	91·0	90	60·7
	Moreton-in-Marsh	Oxford	9·35 a.m.	28·3	28*	60·6
	Paddington	Westbury	10·35a.m.† 3·30 p.m.	95·6	95	60·4
	,,	Taunton	10·35 a.m.	142·9	142*	60·4
	Swindon	Reading	7·21 p.m.	41·3	41*	60·4
	,,	Paddington	4·18 p.m.	77·3	77	60·2
	Exeter	,,	12·41 p.m.	173·5	174*	59·8
	Westbury	,,	10·09 a.m.	95·6	96	59·7
	Oxford	,,	3·16 p.m.	63·5	64*	59·6
	Exeter	,,	1·00 p.m. 1·45 p.m.	173·5	175	59·5
	Bath	,,	9·17 a.m.	106·9	108	59·4
	Swindon	Bath	3·55 a.m.‡	29·6	30	59·2
	Westbury	Taunton	5·09 p.m.	47·1	48	58·9
	Paddington††	Bristol	5·05 p.m.	117·6	120	58·8
	Bristol‡‡	Paddington	11·45 a.m. 5·15 p.m.	117·6	120	58·8
	High Wycombe	Birmingham	9·44 a.m.	84·1	86*	58·7
	Paddington	Swindon	4·30 p.m.	77·3	79	58·7
	Westbury	Reading	5·05 p.m.	59·6	61*	58·6
	Reading	Westbury	11·05 p.m.‖	59·6	61	58·6
	Paddington	Oxford	10·15 a.m.	63·5	65	58·6
	,,	Newport	1·20 a.m.‡	133·4	137	58·4
	Reading	Kemble	10·11 a.m.	55·0	57*	58·0
	Newbury	Paddington	9·57 a.m.	53·1	55	58·0
L.M.S.R.						
Western	Rugby	Watford	6·58 p.m.	65·1	60	65·1
,,	Crewe	Willesden Jc.	6·12 p.m.	152·7	142	64·5
,,	Stafford	Euston	6·52 p.m.	133·6	128	62·6
,,	Willesden Junction	Birmingham	9·26 a.m.	107·5	104	62·0
,,	Blisworth	Euston	11·41 a.m.	62·8	61	61·8
,,	Wilmslow	,,	10·08 a.m.	176·9	172	61·7
,,	Crewe	,,	10·16 a.m.	158·1	154	61·6
,,	Euston	Coventry	11·30 a.m. 2·25 p.m. 5·50 p.m.	94·0	92	61·3
,,	Crewe	Euston	10·35 a.m.	158·1	155	61·2
,,	Coventry	Willesden Jc.	5·12 p.m.	88·6	87	61·1
,,	Euston	Blisworth	4·35 p.m.	62·8	62	60·8
,,	Blisworth	Euston	5·58 p.m.	62·8	62	60·8
,,	Coventry	,,	12·07 p.m. 1·22 p.m. 2·57 p.m.	94·0	93	60·6
Midland	Luton	St. Pancras	10·30 a.m. 11·00 a.m. 5·40 p.m. 8·04 p.m.	30·2	30	60·4
Western						
,,	Stoke	Euston	1·15 p.m.	145·9	145	60·4
	Euston	Wilmslow	6·00 p.m.	176·9	176	60·3
Midland	Cheltenham	Bromsgrove¶	11·40 a.m. 1·36 p.m. 1·47 p.m. 3·28 p.m.	31·1	31	60·2
,,	Mangotsfield	Gloucester	10·50 a.m.	31·9	32	59·8
,,	Luton	Kettering	9·03 a.m.	41·8	42	59·7
,,	,,	Bedford	11·37 a.m. 5·10 p.m.	19·6	20	58·8
Western	Willesden Junction	Northampton	9·16 a.m.	60·4	62	58·5
,,	Euston	Coventry	6·55 p.m.	94·0	97	58·2
L.N.E.R.						
G.N. & N.E.	King's Cross	Darlington	5·30 p.m.	232·3	198	70·4
	Darlington	King's Cross	10·42 a.m.	232·3	198	70·4
G.N. ,,	Grantham	King's Cross	9·40 a.m.	105·5	100	63·3
,,	King's Cross	York	11·10 a.m.§	188·2	180	62·7
,,	York	King's Cross	11·35 a.m.§	188·2	180	62·7
N.E.	Darlington	York	9·08 a.m. 9·45 a.m.	44·1	43	61·5
G.C.	Leicester	Arkwright St.	4·30 a.m.	22·5	22*	61·5
G.N.	Huntingdon	King's Cross	9·30 a.m.	58·9	58	60·9
,,	Grantham	Doncaster	7·42 p.m.	50·5	50*	60·6
,,	Peterborough	King's Cross	3·04 p.m.	76·4	76	60·3
N.E.	Darlington	York	8·49 p.m.	44·1	44	60·2
G.N.	Doncaster	King's Cross	12·04 p.m.	156·0	156	60·0
G.C.	Brackley	Rugby	3·40 a.m.	23·9	24	59·8
G.N.	King's Cross	Doncaster	4·45 p.m.	156·0	157	59·6
G.C.	Rugby	Leicester	4·06 a.m.	19·9	20	59·7
,,	Princes Risborough	Brackley	1·04 p.m.	27·8	28	59·6
,,	Leicester	Nottingham	12·06 p.m. 6·47 p.m.	23·4	24	58·5
N.E.	Northallerton	York	9·05 a.m. 10·35 a.m. 1·19 p.m. 6·19 p.m.	30·0	31	58·1
G.N.R. Ireland	Drogheda	Dublin	7·33 p.m.	31·7	32	59·4

NOTES.—* Working-book time (shorter than public time). † Slip carriage service (mileage not added to that of main train in Table B). ‡ Newspaper train. § Summer service only (not included in mileages, Table B). ‖ Tuesdays, Thursdays and Saturdays only. ††Via Bath. ‡‡ Via Badminton. ¶ Stop for engine banking.

TABLE B—AGGREGATE MILEAGE OF RUNS ON BRITISH RAILWAYS TIMED FROM START TO STOP AT 58 M.P.H. AND OVER, WINTER SERVICES, 1934–1935 AND 1935–1936

Railway.		66 m.p.h. and over.	64 m.p.h. and over.	62 m.p.h. and over.	60 m.p.h. and over.	58 m.p.h. and over.
		miles.	miles.	miles.	miles.	miles.
G.W.R. ..	1934	77 (1)	77 (1)	355 (4)	1,287 (13)	2,578 (25)
,, ..	1935	313 (3)	313 (3)	839 (9)	1,943 (20)	3,684 (39)
L.M.S.R. ..	1934	—	153 (1)	286 (2)	949 (7)	2,348 (31)
,, ..	1935	—	218 (2)	459 (4)	2,361 (27)	2,628 (33)
L.N.E.R. ..	1934	—	—	106 (1)	371 (7)	579 (15)
,, ..	1935	465 (2)	465 (2)	570 (3)	1,067 (11)	1,461 (21)
G.N.R. (Ireland)	1934	—	—	—	—	32 (1)
,,	1935	—	—	—	—	32 (1)
Totals ..	1934	77 (1)	220 (2)	747 (7)	2,607 (27)	5,537 (72)
,, ..	1935	778 (5)	996 (7)	1,868 (16)	5,371 (58)	7,805 (94)

NOTE.—The figures in brackets in each column indicate the number of runs making up each aggregate mileage

between Euston and Coventry at over 60 m.p.h. from start to stop. A notably smart run with a heavy load is that now made from Grantham to Doncaster by the L.N.E.R. 5.45 p.m. down Newcastle express, 50·5 miles in 50 min., at 60·6 m.p.h. The Southern Railway has no runs scheduled at over 58 m.p.h. from start to stop; the quickest on that system is the 87 min. timing from Waterloo to Salisbury of the 11 a.m. and 3 p.m. West of England expresses, which works out at 57·7 m.p.h.

Table B shows the aggregate mileage on British railways of runs booked from start-to-stop at speeds of over 58 m.p.h. The figures are cumulative, the mileage at 66 m.p.h. and over including that at 68 m.p.h. and over, the mileage at 64 m.p.h. including that at 66 and 68 m.p.h., and so on. As compared with 1934, the aggregate mileage in Great Britain booked over 66 m.p.h. has increased from 77 to 778 miles, at over 64 m.p.h. from 220 to 996 miles, at over 60 m.p.h. from 2,607 to 5,371 miles, and at over 58 m.p.h. from 5,537 to 7,805 miles. The biggest individual advance has been on the L.M.S.R., whose runs at over 60 m.p.h. have increased in one year from 7 to 27, and in mileage from 949 to 2,361 miles, but much of this has been done by paring minutes from previous schedules, and so bringing them just within the mile-a-minute range, without any overall improvement of the train schedules concerned. In all, a substantial advance has been made in British railway speed during the past year. In the January issue of *The Railway Magazine* a list is given of the fastest times operating by 70 different train services between London and various provincial cities, towns, and health resorts in 1914 and 1935 respectively. Forty-five of these services are quicker today than in 1914; four remain at the same level; and 21 are still slower than 21 years ago. Five of the last-mentioned are Midland Division services of the L.M.S.R., and eight are Anglo-Scottish services between London and cities north of Edinburgh and Glasgow. Eleven of the 70 journeys tabulated can be made in nine-tenths, or less, of the time taken in 1914, the most notable of these accelerations being London-Newcastle, L.N.E.R.; London-Bristol, G.W.R.; London-Heysham, L.M.S.R.; and London-Portsmouth, S.R. The all-round improvement of all the services included works out at 3·85 per cent.

Table C shows the principal non-stop runs performed over British metals, exceeding 150 miles in length. In the winter services Great Britain claims the four longest, and in the summer service the eight longest non-stop runs in the world. Supremacy belongs to the Flying Scotsman of the L.N.E.R. during the summer, with the run of 392·7 miles in both directions between King's Cross and Edinburgh, and to the up Royal Scot of the L.M.S.R. throughout the remainder of the year, with the run of 299·1 miles from Carlisle to Euston. The fastest non-stop run in the world exceeding 200 miles in length is made by the L.N.E.R. Silver Jubilee, with a booked speed of 70·4 m.p.h. over the 232·3 miles between London and Darlington in each direction, but the German Fliegender Kölner railcar service covers an equivalent distance in considerably less time, though inclusive of a stop at Hanover, 157·8 miles from Berlin (Zoological Gardens Station), reached in 115 min. from the start, at 82·3 m.p.h. start to stop. In all, in the summer time-tables there are 195 runs on British railways daily exceeding 90 miles in length without a stop (including fast freight trains), 98 on the L.M.S.R. 55 on the L.N.E.R., 40 on the G.W.R., and 2 on the Southern; in the winter time-tables the corresponding figures are 84, 35, 40 and 2, with a total of 161. From present indications, it appears likely that the May and July timetables of 1936 will witness some further considerable advances in speed on the figures contained in these tables.

TABLE C—BRITISH DAILY NON-STOP RUNS EXCEEDING 150 MILES IN LENGTH, WINTER, 1935–1936

Railway and Section	Between	Distance	Fastest service			No. of Runs Daily	
			Train	Time	Speed	Summer	Winter
		Miles		Min.	m.p.h.		
L.N.E.R.							
G.N. & N.E. ..	King's Cross-Edinburgh ..	392·7	{10.00 a.m.D. / 10.00 a.m.U.}	450	52·4	2	—
L.M.S.R.							
Western	Euston-Kingmoor (Carlisle) ..	301·1	10.00 a.m.D.	332	54·4	1	—
,, ...	Carlisle-Euston††	299·1	12.10 p.m.U.	330	54·2	1	1
,, ...	Euston-Holyhead	263·6	12.27 p.m.U.	303	52·2	¶1	—
Western & Cal. ..	Glasgow-Crewe	243·3	10.45 p.m.U.	305	47·9	1	1
L.N.E.R.							
G.N. & N.E. ..	King's Cross-Darlington ..	232·3	{5.30 p.m.D. / 10.42 a.m.U.}	198	70·4	2	2
G.W.R.	Paddington-Devonport ..	228·1	10.30 a.m.D.	242	56·6	1	—
,, ...	Paddington-Plymouth† ..	225·5	12.50 a.m.D.	240	56·4	3	1
,, ...	Laira Junc.‡-Paddington ..	223·8	12.22 p.m.U.	258	52·0	1	—
L.M.S.R.							
Western & Cal. ..	Crewe-Carstairs	214·6	10.32 p.m.D.	264	48·8	1	—
Western	Euston-Prestatyn	205·5	11.15 a.m.D.	230	53·6	1	—
,, ...	Camden-Liverpool (Edge Hill)	191·2	7.45 p.m.D.	294	39·0	¶1	¶1
,, ...	Euston-Mossley Hill	189·7	{6.05 p.m.D. / 10.10 a.m.U.}	200	56·9	2	2
L.N.E.R.							
G.N.	King's Cross-York	188·2	{11.10 a.m.D. / 11.35 a.m.U.}	180	62·7	2	—
,, ...	King's Cross-Leeds	185·7	4.02 p.m.U.	193	57·7	2	2
L.M.S.R.							
Western	Euston-Wilmslow	176·9	10.08 a.m.U.	172	61·7	2	2
G.W.R.	Paddington-Exeter	173·5	12.00 noonD.	169	61·6	4	5
L.M.S.R.							
Western	Crewe-Broad Street	162·5	11.44 p.m.U.	216	45·1	¶1	¶1
,, ...	Euston-Crewe	158·1	10.16 a.m.U.	154	61·6	14	12
L.N.E.R.							
G.N.	King's Cross-Doncaster ..	156·0	11.54 a.m.U.	156	60·0	2	3
L.M.S.R.							
Western	Crewe-Willesden Junc. ..	152·7	6.12 p.m.U.	142	64·5	3‖	3‖

* Daily during height of summer season only. † North Road station. ‡ Plymouth.
§ Liverpool. ¶ Fast freight service. ‖ Includes two fast freight services.
†† From Carlisle No. 12 Box, 297·9 miles, during summer timetable working.

GERMAN RAILCARS NOT TO WAIT.—From an official announcement in *Die Reichsbahn* we learn that the conference on passenger train timings held at Bremen in December last gave rise to some doubt among the staff as to whether the express railcars should wait five minutes beyond their starting time, not only when necessary to make connection with the express and semi-fast trains, but also in the case of slow passenger trains. As the punctual departure of the railcars is of first importance, an instruction has been issued that they are not to wait for slow trains which are behind time, unless in exceptional cases this appears desirable and permission has been granted by headquarters, after an inquiry into the facts.

Southern Railway Rating

Appeals dismissed by the House of Lords

Judgment was given on Friday, January 24, by the House of Lords in the consolidated appeals from the decision of the Railway and Canal Commission directing the reduction of the rating assessment of the Southern Railway Company from £2,180,000, at which figure it had been fixed by the Railway Assessment Authority, to £1,077,131. At the hearing before the Assessment Authority the railway company had contended that the assessment figure should not exceed £500,000, and the county councils of London and Middlesex and the boroughs of Croydon and Brighton claimed that it should have been £3,000,000. The Southern Railway succeeded on the main issue in its appeal to the Railway and Canal Commission, and was again successful before the House of Lords, which dismissed the appeals by the Railway Assessment Authority and by the local authorities concerned.

Rating Law in England

The Lord Chancellor, in giving judgment, said that there was an appeal direct to the House of Lords by the joint effect of the Railway and Canal Traffic Act (as amended) and of Section 9 (4) of the Railways (Valuation for Rating) Act, 1930, but only on questions of law, the decision of the Commissioners on questions of fact being final. The Railway Assessment Authority, not being interested parties, appeared mainly for the purpose of obtaining directions which would guide them in the performance of their duties under the Act of 1930. The London County Council and other local authorities were interested in supporting the decision of the Railway Assessment Authority, or at least of obtaining a decision which might enable them to secure from the Commissioners the fixing of a higher figure than £1,077,131. Although the actual points for decision turned mainly, if not entirely, on the construction to be placed on certain sections of the Railways (Valuation for Rating) Act, 1930, all parties were agreed that it was essential to bear in mind the law with regard to the rating of railways as it stood at the date of the passing of the Act. The Lord Chancellor then traced the history of rating law in England and Wales from the Poor Relief Act, 1601. The Parochial Assessment Act of 1836, he explained, provided that the rate upon rateable hereditaments in each parish should be based upon their net annual value, *i.e.*, on the rent at which they might reasonably be expected to let from year to year . . . deducting therefrom the probable average annual cost of the repairs, insurance, and other expenses necessary to maintain them in a state to command such rent. Substantially the same language was used in the Parochial Assessment Act, 1862, and in the Valuation of Property Metropolis Act, 1869, with regard to London.

In the assessment of great public utility undertakings, such as railways, waterworks, gasworks, and the like, whose operations might stretch far beyond the limits of any individual parish, the Courts were compelled to evolve a system of calculation which involved a number of very difficult assumptions, but which became recognised as the standard method. In the case of a railway the undertaking was divided into the portions regarded as directly productive of profit, such as the permanent way, and the portions regarded as only indirectly productive, such as stations. The latter were usually valued by taking the cost of erection and allowing a percentage upon that cost. This method was commonly described as the "contractor's basis." For assessing the rateable value of the permanent way the method commonly known as the "profits basis" was adopted.

The Profits Basis

In order to apply the profits basis the calculation began by ascertaining the gross receipts earned in the parish for the latest period prior to the date of the rate. From the gross receipts earned in the parish was deducted a proper proportion of the working expenses throughout the system and a deduction had further to be made for the portion allocated to the parish of rent hypothetically paid for the use of stations and other indirectly productive assets, and for the rates payable thereon. The amount remaining after these deductions from the gross receipts earned in the parish was taken as the net profit divisible between the owner and the hypothetical tenant. Since the hypothetical tenant was rateable only in respect of hereditaments which he was supposed to occupy, it was necessary to make a fair deduction for the use of his personalty and stock-in-trade. The method adopted was to estimate the amount of capital required to work the whole system, to calculate a fair proportion of this amount as being fairly allocated to the particular parish and to allow the deduction of a certain percentage on the capital so ascertained from the amount of the divisible net profit. The percentage was fixed at a sum considered to be sufficient to give the tenant interest upon his money and a fair return on his capital for the risks undertaken and by way of profit on his adventure. The portion of the net profits which remained after this deduction was regarded as the rent which the hypothetical tenant would be prepared to pay, deducting the statutory allowances thereon in order to arrive at the true rateable value.

This system prevailed until the outbreak of the war, and during the war period the rates were adjusted by arrangement between rating authorities and the railway companies by agreement and not fixed on any precise basis. After referring to the Railways Act, 1921, the Rating and Valuation Act, 1925, the Rating and Valuation Apportionment Act, 1928, and the Local Government Act, 1929, his Lordship expressed the opinion that the Court was right in disregarding the relevance of these Acts to affect the construction of the language used in the Act of 1930.

The Act of 1930

The Railway Assessment Authority constituted under the Railways (Valuation for Rating) Act, 1930, was required by Section 3 (3) of that Act to determine the net annual value of the undertaking of a railway company as a whole, to apportion the net annual value so determined among all the railway hereditaments in England occupied by that company, and to calculate the rateable value of every such hereditament by reference to the net annual value so apportioned to it. Section 4 contained the provisions in accordance with which the net annual value was to be ascertained—and it was on the language of that section that the main controversy turned in the present case. By that section the Railway Assessment Authority was required to ascertain, in the first instance, the average net receipts of the company for the accounting years 1928 and 1929; that figure had been ascertained in the present case at £5,408,000, and no dispute arose with regard to it. By section 4 (1) (*b*) the Railway Assessment Authority was then to estimate by reference to the average net receipts ascertained as aforesaid, the rent at which the railway hereditaments occupied by the company might reasonably be expected to let as a whole from year to year, if the tenant undertook to pay all usual tenant's rates and taxes and tithe rent-charge (if any) and to bear the cost of the repairs and insurance and other expenses (if any) necessary to maintain the hereditaments in a state to command that rent.

The subsection went on to provide:—"The annual rent so estimated shall, for the purposes of this Act, be deemed to be the net annual value of the company's undertaking as a whole."

Their Lordships could not fail to notice the identity of the language used in this subsection with what had been the law ever since the Parochial Assessment Act of 1836 and what had been the basis applicable to railway rating for the last hundred years. The only substantial difference from the old system was the provision that the annual value of the whole undertaking was to be ascertained as a whole, and should then be apportioned between the different parishes, instead of attempting to ascertain the earning capacity of each part of the railway

line lying within a particular parish. The new method also did away with the necessity of drawing a distinction between directly and indirectly productive parts of the undertaking and calculating the rateable value of the indirectly productive parts of the undertaking in each parish on the "contractor's basis." But what had to be ascertained still remained the rent at which the hereditaments might reasonably be expected to let from year to year in the terms set out in the Act. The appellants mainly relied on the language of Section 4 subsection (2), which provided:—

"In estimating for the purposes of this section the rent at which the railway hereditaments occupied by a company might reasonably be expected to let as a whole, the Railway Assessment Authority and any Court before which any determination of the authority is under appeal shall not be bound to give effect to any custom or practice affecting the valuation of railway hereditaments which obtained prior to the passing of this Act in regard to the deduction or allowance to be made in respect of the capital of a tenant, but shall have regard to all relevant circumstances and all material considerations with a view to securing that such estimated rent shall represent a fair and just division of the net receipts as between landlord and tenant."

Landlord and Tenant

The appellants contended that the Act had put an end to the old system of calculating the amount of the capital required by a tenant for the working of the undertaking, and allowing him a percentage thereon, and that it was now necessary to follow some other method. In particular it was urged that the hypothetical landlord was entitled, having regard to the large amount of capital which had been expended by him in creating the railway company's undertaking, to some proportion of the net receipts, obtained either by a comparison of the landlord's capital and of the tenant's capital, or by allowing the rent at which the railway hereditaments might reasonably be expected to let as a whole from year to year to be influenced and presumably increased by a consideration of the large amount of capital expended in creating the immovable parts of the undertaking. He could see no ground for any such conclusion. The only custom or practice which the Authority was to be at liberty to depart from was in regard to the deduction or allowance to be made in respect of the capital of a tenant. The legislature thus clearly contemplated that there would be a deduction or allowance in respect of the tenant's capital, and having regard to the universal practice which obtained before the Act came into force of making such a deduction or allowance in the shape of a percentage on the tenant's capital, it was, in his opinion, clear that the section in no way directed the Authority to depart from that method and to adopt some other method which was left wholly undefined. It was not in dispute that it was essential in some way to exclude the profits earned by the hypothetical tenant's rolling stock, plant, and other implements, and their Lordships were not informed of any clear and satisfactory method of doing that except by means of a percentage on the capital employed in providing such chattels.

The appellants further contended that the reference to a fair and just division of the net receipts showed that the old method of ascertaining the rent which the tenant was prepared to pay must be abandoned, since that basis of calculation provided for the tenant receiving his share of the net receipts before the landlord got anything, and might, in some cases, involve the landlord getting nothing.

He was quite unable to accept that argument. He saw no justification for altering the conception of the relationship between landlord and tenant to a conception of joint adventurers. The explanation for the use of the word "division" in the subsection was probably to be found in the fact that it was the usual expression in rating law at the date of the Act, and that, if the amount which the tenant would require to induce him to take and operate the hereditaments was properly ascertained and deducted from the total net receipts, the result was to divide the net receipts fairly and justly between landlord and tenant, even though, in an extreme case, the landlord's share might be nothing at all. It was the rent which was to be estimated in such a way as to represent a fair and just division, and it was evident that the rent and nothing else was to be the landlord's share.

He was not prepared to say that there were no circumstances in which the profits basis, as it had been previously applied, would be inappropriate, or that in no circumstances could any other method be adopted. The more accurate way of stating the position was that that method was the recognised one, and was one which the authority was justified in adopting; that it would need special circumstances to require the adoption of a different method; and that the only alternatives put forward by the appellants were in his (Lord Hailsham's) judgment, plainly inadmissible. On the main point of construction, therefore. the decision of the Railway and Canal Commission was correct.

Subsidiary Questions

Certain subsidiary questions were raised by the appellants, on which it was desirable that the House should express an authoritative opinion. It was contended that the Commissioners had misapplied the profits basis. There was no doubt that the Railway Assessment Authority was free to disregard old customs and practices in regard to the deduction or allowance in respect of the tenant's capital. The Railway & Canal Commission had itself decided against the company in regard to the old practices as to valuation of rolling stock, and as to adding to the cost of manufacture of rolling stock by the company in its own workshops a percentage supposed to represent the manufacturer's profit. It was also asserted by the appellants that the percentage of 15 per cent. on the tenant's capital was arrived at by the Commissioners on wrong views as to principle. He was not satisfied that these contentions were made out, but there were certain phrases in the judgments of the Commissioners which might be open to misconstruction. It was also argued by the interested parties that the Assessment Authority was precluded from taking into account the actual results of any years because it was limited to a consideration of the average net receipts as directed by Section 4 (*i*) (*a*). He could not accept that view. The figures of individual years were relevant as showing the tendency of the receipts to rise or fall, and therefore as an indication of the risk which the hypothetical tenant would have in mind when he was contemplating renting the premises.

Landlord's Capital

Another point urged was that the authority had omitted to take into account the landlord's capital, and it was pointed out that considerable sums had recently been spent which were not reflected in the net receipts of the standard years. Again it was urged that the rates in the standard years were paid at a much higher rate than those which would be payable by virtue of the authority's decision. The existence of these two factors would be reflected in the percentage allowed to the tenant on his capital, but he was not satisfied that they had been ignored by the Court below from that point of view. How much the percentage ought to be was a question of fact for the authority and not for this House. It was finally contended by the appellants that it could be shown mathematically from the accepted figures in the case that the Court had not given effect to its own decision as to disallowing certain claims for obsolescence and for allowance for mass production. In his (Lord Hailsham's) judgment, if such a mistake were made, it would be a pure error of calculation and not a question of law for this House. It was open to the Railway & Canal Commission, on a proper application by the appellants, to vary its previous figures in the light of the views he had expressed on the subsidiary questions mentioned. He was not satisfied that the Commissioners had either included something which was legally inadmissible, or excluded something to which they were legally bound to have regard. He therefore moved that the appeals be dismissed, with costs.

Lords Thankerton, Russell of Killowen, Maugham, and Roche concurred.

The Last Journey of King George V

Practically from the moment that the death of King George V was announced, a large number of special train movements became necessary. At the first the brunt fell on the L.N.E.R. in catering for special traffic between Wolferton (the station for Sandringham) and London, and this company also carried the King of Norway and Queen Maud, the late King's sister (who arrived in the Tyne by the motorship *Venus*) from Newcastle to King's Cross in the Silver Jubilee train on Friday, January 24. Many other foreign royal personages and delegations followed from the Continent, and in most cases were conveyed either by the L.N.E.R. from Harwich, or by the Southern Railway from English Channel ports.

Outstanding in interest of the many special railways arrangements necessitated by the death of His late Majesty, however, was naturally the journey of the funeral train on Tuesday from Paddington to Windsor. The royal body had been brought from Wolferton to King's Cross on the previous Thursday (January 23) in a special L.N.E.R. train, and it was arranged that the same train should also be used for the G.W.R. journey. On the L.N.E.R. it was headed by locomotive No. 8520 (Driver Thurston and Fireman Tobell) from Wolferton to Kings Lynn, and by the "Sandringham" class locomotive No. 2847, *Helmingham Hall*, from King's Lynn to King's Cross (Driver F. Collis and Fireman Foister, both of Cambridge). The customary route via Ely, Cambridge, and Hitchin was taken. The train was then stabled at Highgate until Saturday, when it travelled via Canonbury to Acton and there was handed over to the G.W.R.

On the G.W.R. it was arranged that the royal train should be drawn by locomotive No. 4082, *Windsor Castle*, which was built at Swindon in April, 1924, and on the 28th of that month was driven from the works to Swindon station by King George himself. On Tuesday the train left Old Oak Common just after 10 o'clock, with the *Windsor Castle* attached at the rear. The leading engine was detached at Paddington Arrival Box Inner Home signal and the *Windsor Castle* propelled the train into platform No. 8, where it arrived at 10.35. Its formation was as follows:—

Engine No. 4082 ..	*Windsor Castle*
Brake first	No. 4188
First saloon	No. 41280
First saloon	No. 43099
Royal funeral saloon ..	No. 46
Royal saloon	No. 395
Royal saloon	No. 396
First saloon	No. 43100
First saloon	No. 41281
Brake van	No. 109

Excepting the funeral saloon, which was specially painted black, all the coaching stock was in the L.N.E.R. varnished teak livery.

Five special trains were booked to carry invited guests, four of which were scheduled to leave, respectively, at 11.0, 11.10, 11.20, and 11.30, and the fifth at 11.50 to act as a pilot to the funeral train. Actually the first guest train was despatched shortly after the royal train had arrived at platform No. 8. The departures and arrivals were as follow:—

Paddington Departure		Windsor Arrival	
Booked	Actual	Booked	Actual
a.m.	a.m.	a.m.	a.m.
(11. 0)	10.42	(11.30)	11. 9
(11.10)	10.55	(11.40)	11.24
(11.20)	11.15	(11.50)	11.45
(11.30)	11.30	(12. 0)	11.59

The total number of passengers conveyed by these four guest trains was 608.

As we point out in an editorial note on page 189, Paddington station is by far the most suitable London terminus for carrying out with dignity the requirements of such a procession. This is due largely to the genius and foresight of Brunel, who was responsible for the generous layout of the station when it was built in 1854 and assumed a form which has remained unchanged in its essentials ever since. This was exemplified on Tuesday when the long procession entered down the "exit" slope, for the cab space between platforms 8 and 9 provided ample room for manœuvring of troops; they were also enabled to depart rapidly up the entrance cab ramp and so cause a minimum of delay. Incidentally, the whole of the cab rank space was available for the purpose, as a stand for guests of the G.W.R. was built over the buffer stops of platform No. 9.

As the head of the funeral procession did not arrive at Paddington station until 11.50 a.m. it became obvious that the schedule could not be adhered to. It was not until about 12.15 p.m. that the gun carriage bearing the body of the late King reached the interior of the station, and the special guest train acting as pilot was despatched from platform No. 9 at 12.26 p.m. It reached Windsor at 12.57 p.m., or 34 minutes later than schedule, but having gained two minutes *en route*. For five minutes there was complete silence and then the funeral train itself was signalled and slowly glided from the platform at precisely 12.33½ p.m. Whole minutes elapsed before the last coach rounded the curve at the end of the station and passed from sight. During the brief 35-minute journey many thousands who lined the track were enabled to see the train pass, mostly at comparative low speed, for a number of 10 m.p.h. speed restrictions were imposed. At Southall some 2,000 of the staff of one works lined the embankment and stood bareheaded. The facing points at Paddington (Arrival box) and Subway junction were clipped and padlocked, and special supplemental signalling instructions were given for the whole route. The locomotive *Windsor Castle* was draped with the Royal Arms and bore the Royal crown-topped headlamps. It was in charge of Driver W. H. Sparrow and Fireman Miles.

The train arrived at Windsor at 1.9 p.m. The funeral saloon, No. 46, was taken out of the train after the departure of the cortége, and the train re-assembled in reverse order for the return journey, namely, the *Windsor Castle* locomotive, brake van No. 109, first saloons Nos. 41281 and 43100, Royal saloon No. 396, Royal saloon No. 395, first saloons Nos. 43099 and 41280, and brake first No. 4188. L.N.E.R. staff was available at Windsor to uncouple and recouple the coaches as required. The ordinary train service from Slough to Windsor was entirely suspended from 10.30 a.m. to 6 p.m. and the service from Windsor similarly suspended from 10.30 a.m. and not resumed until after the return special trains had been accommodated.

The special guest trains left Windsor after the entombment as follow:—

No. of Guest Train	Windsor depart	Paddington arrive
5	2.44 p.m.	3.11 p.m.
ROYAL TRAIN	2.51 p.m.	3.22 p.m.
4	3. 1 p.m.	3.29 p.m.
3	3.11 p.m.	3.39 p.m.
1	3.30 p.m.	3.57 p.m.

No. 2 guest train was cancelled. The empty royal train was cleared from Paddington No. 8 line at 3.59 p.m.

Repercussions in other countries were of two kinds, namely, special arrangements for conveying foreign royalty and delegations from various parts of the Continent to their points of embarkation, and marks of respect paid by railway administrations in different parts of the British Empire. Two examples in the latter category suffice. Throughout India all trains were stopped for five minutes, and in Canada principal stations and ticket offices were draped in Royal mourning.

PREPARATION OF THE ROYAL FUNERAL TRAIN.—The closest co-operation between departments concerned and the most expeditious work on the part of the Chief Mechanical Engineer's staff of the L.N.E.R. was necessary to prepare the special train used for the funeral. Mr. Gresley gave his staff the necessary instructions in the early afternoon of Tuesday, January 21. The coach chosen to convey the body of King George was first class saloon No. 46, which had been similarly used for the late Queen Alexandra. The coach was quickly located and arrived at Stratford works for alteration the same afternoon. Within the short space of less than twenty-four hours the interior fittings, including chairs, settees, and tables, had been removed and the centre partition taken out; the centre saloon interior had been lined throughout with black and mauve velvet on the walls, a black velvet carpet covered the floor, and the support for the coffin

erected in the centre. Where the coffin was to rest a hair cord carpet, mauve in colour, was laid. All the windows throughout the coach were painted black to exclude all light, black velvet curtains were hung over the doors, and the end corridors were similarly hung with black velvet. Illumination in the centre saloon was provided by two-light brackets at each end, with silver fittings. At the same time the coach exterior had been painted black with mouldings finished in mauve; the roof was left white.

The coach was then moved to Highgate sidings, and by 10.0 p.m. (at which time the complete train left for Kings Lynn via King's Cross) each of the coaches had been turned separately on the locomotive turntable at Hornsey and reassembled in correct order and direction for the journey. The train was worked from Kings Lynn the following morning and arrived at Wolferton station at 10.42 a.m. Owing to the private nature of the occasion no exterior decoration whatever was used on the locomotive or the train for the journey to King's Cross. For the journey from Paddington to Windsor, however, hatchments of the Royal Arms, specially constructed by the L.N.E.R. from a drawing supplied by the Garter King of Arms, were added on each side of the coach carrying the body of His late Majesty.

RAILWAY AND OTHER MEETINGS

Midland Railway Company of Western Australia Limited

The ordinary general meeting of the Midland Railway Company of Western Australia Limited was held at Winchester House, Old Broad Street, E.C.2, yesterday (January 30), Mr. W. S. Poole (Chairman of the company) presiding.

The Secretary, Mr. William Tait, read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that they were meeting at a time of great national sorrow, a sorrow which was as deeply felt by the people of Western Australia as by those of this country. They mourned the passing of a great King, the father of his people.

The company had also suffered a personal loss, in the death since their last meeting of their former Chairman, Sir George Alexander Touche, Bart., who had been a director for 34 years, and Chairman during the last 15 years of that period. The directors mourned the passing of a brilliant colleague and a true friend. His son, Sir Norman George Touche, Bart., had been appointed to fill the vacancy on the board.

The accounts now submitted showed some improvement on those of a year ago, and as the increases were somewhat similar to those in 1934, it could be said that some measure of progress was being maintained. Gross traffic receipts at £159,574 represented an advance of £1,367 on 1934, when the gain on 1933 was £1,502, so that there had been an improvement of £2,869 in the past two years. Net receipts were £88,472, an increase of £2,384, and the total improvement in two years had been £6,015. Working expenses were £71,102, compared with £72,119 in 1934 and £74,248 in 1933, or £3,146 less than two years ago. The operating ratio of 44·56 per cent. compared with 44·58 per cent. in 1934 and 47·38 per cent. in 1933. Poor wheat harvests had reduced that most important factor in the company's traffic, and had also reacted upon traders, restricting their activities and limiting the earnings of the railway. The loss on exchange in this way for six years had amounted to £56,080.

Up to the end of last June £6,055 had been spent on the programme of reballasting and permanent way improvements mentioned at the last meeting, and increased expenditure under this head was to be looked for owing to the necessity of reconstructing one bridge at a cost of £3,600, and of strengthening three others.

There seemed no prospect of an imminent alteration in the present exchange conditions between Great Britain and Australia, whereby £125½ in Australian currency equalled £100 sterling. This was a great drain on the company's earnings. The directors regretted their inability to pay a dividend on the unified ordinary stock, as they were conscious of the fact that no return had been made thereon for the past five years. The situation called more than ever for a rigid conservation of the company's reserves. Receipts in the first five months of the current year had shown a decrease, and there was a probability that the wheat crop would be less than in 1934-35 owing to the shortage of rainfall. Agriculture was suffering from the depression, and land sold by the company continued to revert to the railway owing to the inability of the purchasers to fulfil their obligations.

In general, however, Australia was maintaining the progress manifested in previous years, and there were signs of greater business activity, increased confidence, and a more hopeful outlook. Australian securities enjoyed a high regard in this country. The depression mentality was passing, the company could look forward to the future with a considerable measure of confidence.

The report and accounts were unanimously adopted.

RAILWAY AND OTHER REPORTS

Mersey Railway.—The Secretary writes, January 24: "The directors, at their meeting on the 23rd instant, resolved to pay the full dividend of 3 per cent. on the perpetual preference stock and to recommend a payment of a dividend of ¾ per cent. on the ordinary stock. The dividend on the ordinary stock for 1934 was ¾ per cent."

Metropolitan Railway Surplus Lands Co. Ltd.—A final dividend of 2¼ per cent. is recommended, making, with the interim dividend of 1⅜ per cent., 3⅝ per cent. for the year 1935, the same as for the previous year. The sum of £2,000 is again transferred to reserve, and the amount carried forward is £3,115, as against £2,502 brought in.

Tilling & British Automobile Traction Limited.—Income for the year 1935 was £349,731, compared with £295,473 for 1934, and the profit was £328,718, against £276,877. The directors recommend a dividend of 4 per cent. for the half year ended December 31, and a further dividend of 2 per cent. for the year on the cumulative 8 per cent. participating preference shares, making a total of 10 per cent. for the year 1935, the same as for 1934. They also recommend a final dividend of 5 per cent., making 10 per cent. for the year, on the ordinary shares. This is the same as for 1934, but is on a capital enlarged by the 25 per cent. capital bonus distributed in October, 1934. In the balance sheet the London Transport stocks awarded to the company in respect of the transfer of its London omnibus undertaking are entered at £173,593. Tilling & British Automobile Traction Limited is the joint controller with the appropriate main line railways of a large number of provincial omnibus companies.

Westinghouse Brake & Signal Co. Ltd.—Accounts for the year to September 30, 1935, show a profit of £175,456, after providing for depreciation, taxation, and all working expenses and financial charges. For the preceding year the net profit was only £23,615. It is proposed to increase the dividend from 2½ per cent. to 10 per cent., requiring £86,983, to add £50,000 (against nil) to general reserve, and to carry forward £42,666.

Forthcoming Meetings

Feb. 5 (*Wed.*).—**Forth Bridge Railway Company.** (Statutory General), King's Cross Station (L.N.E.R.), N.1, at 11.15 a.m.

Feb. 11 (*Tues.*).—**Oldham, Ashton-under-Lyne and Guide Bridge Junction Railway Company.** (Ordinary Annual), King's Cross Station (L.N.E.R.), N.1, at 11.15 a.m.

NOTES AND NEWS

Christmas Trees at Railway Stations.—The L.N.E.R. reports that, as a result of exhibiting Christmas trees at Hull, Newcastle, York, Darlington, and Harrogate stations, 3,135 parcels and £310 in cash were handed to children's hospitals, &c.

Durham Station Alterations.—In order to facilitate the working of passenger trains from and to the Bishop Auckland branch, arrangements are being made by the L.N.E.R. to lengthen by 20 ft. Nos. 1 and 2 bay platforms on the up side of Durham station.

Visitors to Britain in 1935.—The number of foreign visitors to the United Kingdom last year showed an increase of 27,143 over the total for 1934. The figures are 315,744 in 1935 and 288,601 in 1934. From the United States and France there were increases of 10,639 and 3,783, respectively.

The Barkston Ballast Train Accident.—The Ministry of Transport inquiry into the eight men who lost their lives at Barkston, near Grantham, L.N.E.R., on Sunday, January 19, was held by Colonel Woodhouse on the 24th. The evidence of the drivers and firemen of the two light engines was heard in camera.

S.R. Holiday Saving Scheme.—Tomorrow, February 1, the Southern Railway will introduce a holiday saving scheme similar to those now being operated by the L.M.S.R. and L.N.E.R., which were described on page 166 of last week's issue of THE RAILWAY GAZETTE. Special collecting cards, one-shilling saving stamps, and ten-shilling vouchers will be available at all Southern Railway stations and town offices.

New Steel Laboratory.—A new laboratory building, covering an area of some 7,250 sq. ft., has been completed by High Duty Alloys Limited, of Slough. This is the fourth addition of a laboratory block to the premises at Slough to be made since the inception of the company in 1928. As well as controlling the technical activities of High Duty Alloys Limited, the laboratory will supervise the quality production of the firm's associates, Magnesium Castings & Products Limited, and High Duty Bronze Limited.

G.W.R. Centenary Film, "The Romance of a Railway."—The Western Electric Company has been entrusted with the distribution of the G.W.R. centenary film, which takes 40 minutes to project. As we mentioned at the time of the centenary celebrations, land and seascapes of South Wales and the West Country are included, as well as historical reconstructions with the period costumes of early events in G.W.R. history. The Western Electric Company is prepared to make special arrangements with local education authorities for showing this film in all their schools through the road show service, which includes, for one moderate hiring fee, films, equipment, and skilled operators.

Weight of American Rolling Stock.—All-steel 12-wheeled Pullman cars in use on the U.S.A. railways weigh from 80 to 85 English tons, to which must be added four to six tons for air conditioning equipment, according to the system used.

Guest Keen Baldwins Iron & Steel Company.—The name of the British (Guest Keen Baldwins) Iron & Steel Co. Ltd. has been changed to Guest Keen Baldwins Iron & Steel Co. Ltd. by resolution of the company, passed at an extraordinary general meeting held on January 13.

Highland Airways.—In a report on the company's activities during 1935, Highland Airways Limited (a subsidiary to the British Airways Limited combine) states that 97,937 lb. of mail were carried in 1935, as compared with 19,482 lb. in 1934. Passengers carried in 1935 numbered 3,815 as against 3,007 in 1934. During the last three years the mileage flown has increased as follows:—1933, 43,868; 1934, 84,197; 1935, 93,441. Subject to a radio station being available at Inverness by May 1, the company will then begin a Glasgow-Inverness service with a stop en route at Perth.

Railway Finance Corporation £27,000,000 Issue.—The Railway Finance Corporation, which was registered at the end of December for the purpose of raising the money necessary for the Government's £26,500,000 plan for railway improvements, is making an issue of £27,000,000 of 2½ per cent. guaranteed debenture stock, redeemable 1951-52. The issue price is £97 per cent., and the list of applications will be opened and closed today (Friday). Interest will be payable on February 1 and August 1. Details of the formation of the corporation were given in an editorial note on page 1 of our issue of January 3.

Northern Ireland Traffics.—On railways wholly in Northern Ireland, the number of passengers (exclusive of season ticket holders) carried during the first ten months of 1935 was 5,068,411, against 4,946,674 for the corresponding period of 1934, and receipts from passengers were £234,091, compared with £225,737. Merchandise and minerals carried in the first ten months of 1935 were 450,406 tons, against 439,554 tons in the corresponding period of 1934, and the total receipts from goods traffic were £151,382, against £147,019. On railways partly in Northern Ireland, passengers in the first ten months of 1935 numbered 5,099,653, against 4,555,108 for the corresponding period of 1934, and passenger receipts were £382,069, compared with £363,402. Goods and minerals carried in the first ten months of 1935 were 800,656 tons, compared with 779,184 tons in the first ten months of 1934, and total receipts from goods traffic amounted to £523,567, against £481,876.

The Shrivenham Inquest.—The adjourned coroner's inquest into the death of the passenger and driver in the mail train concerned in the collision with a coal train at Shrivenham, on January 15, was resumed and concluded on January 22. The jury returned a verdict of "accidental death" and expressed the view that there was nothing to prove negligence on the part of the servants of the railway company.

G.W.R. (Additional Powers) Bill.—Under this Bill provision is made for borrowing £5,500,000 through the Railway Finance Corporation, recently established under agreement with the Treasury, for works to be undertaken in consequence of that agreement, and which require Parliamentary sanction. These works include the Dawlish-Newton Abbot deviation, and a new railway about 7 miles long from a point near St. Germans to Looe. It is also proposed to abandon a section of the Marlborough branch railway, for which a new line has already been constructed in substitution; a section of the Rhondda and Swansea Bay Railway at Briton Ferry, and the construction of the Clydach Valley Railways, which were authorised in 1912.

Design, Manufacture, &c., of Signal Material.—At the opening, on the evening of January 22, of a general meeting of the Institution of Railway Signal Engineers, the members, at the suggestion of the President (Mr. H. E. Morgan), rose and stood in silence for a moment as a mark of respect for King George V. The President announced that the Council had awarded the first and second prizes for the best student's essay of the year to Messrs. F. W. Young and E. J. Bevan, respectively, and the first and second awards for the best paper of the year to Mr. F. Edwards and Mr. F. B. Egginton, respectively. The meeting then proceeded to read and discuss a paper by Mr. F. W. Hardman on the design, manufacture and examination of mechanical railway signalling. Among those who took part in the discussion were Messrs. C. H. Hills, F. R. Addis, E. W. Hallam, W. H. Hayles, W. J. Sadler, R. S. Griffiths, F. J. Knibbs, H. M. Goud, and the President.

G.W.R. Lands.—Western Enterprises Limited has been incorporated as a private company with a nominal capital of £100 in £1 shares, and offices at 64, Lincoln's Inn Fields, W.C.2. The objects are to acquire lands, buildings, and hereditaments in the vicinity of a railway owned or worked by the Great Western Railway and to prepare sites, erect houses, flats, factories, aerodromes, etc., and make advances on security. The directors are: Mr. Charles R. V. Coutts (Manager and Actuary, Provident Mutual Life Assurance Association); Sir William C. D. Dampier (Director, Cambridge University and Town Water-

works Company); Mr. Charles J. Hambro (Director, Bank of England and a Deputy Chairman, G.W.R.); Mr. G. F. Luttrell (Director, G.W.R.); Mr. Wilfred S. Mansfield, University lecturer, Cambridge; and Mr. Francis W. Showers (Surveyor and Estate Agent, Great Western Railway). In the Additional Powers Bill of the G.W.R., power is now being sought to enable the railway to subscribe for shares, stocks, or debentures in any company having for its principal object the development of any estate or interest in property in the vicinity of a railway owned or worked by the G.W.R., and to allow the railway to advance money to such company on mortgage or on such other security as the railway may think fit.

Reconstruction of the Transandine Railway.—The Government of the Argentine Republic has decided that the portion of the Transandine Railway damaged just two years ago by floods is to be reconstructed at once, and has voted over $5,500,000 paper for the purpose. It will be remembered that a long length of line was destroyed and that—as recorded in our issues of June 7 and August 9 last—it was decided that the line ought not to be abandoned. The service of road motor vehicles, which is at present bridging the gap, was also described in the *Railways and Road Transport Section* of our issue of August 30 last.

Road Accidents.—The Ministry of Transport return for the week ended January 25 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year:—

	Killed, including deaths resulting from previous accidents	Injured
England ...	93 (113)	2,635 (2,955)
Wales ...	5 (6)	112 (111)
Scotland ...	7 (9)	198 (300)
	105 (128)	2,945 (3,366)

The total fatalities for the previous week were 100, as compared with 115 for the corresponding period of last year.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 4th Week			Totals to Date		
	1936	1935	Inc. or Dec.	1936	1935	Inc. or Dec.
L.M.S.R. (6,919½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	358,000	355,000	+ 3,000	1,449,000	1,437,000	+ 12,000
Merchandise, &c. ...	440,000	442,000	— 2,000	1,723,000	1,687,000	+ 36,000
Coal and coke ...	287,000	272,000	+ 15,000	1,144,000	1,050,000	+ 94,000
Goods-train traffic ...	727,000	714,000	+ 13,000	2,867,000	2,737,000	+ 130,000
Total receipts	1,085,000	1,069,000	+ 16,000	4,316,000	4,174,000	+ 142,000
L.N.E.R. (6,336 mls.)						
Passenger-train traffic...	235,000	238,000	— 3,000	985,000	971,000	+ 14,000
Merchandise, &c. ...	303,000	319,000	— 16,000	1,229,000	1,214,000	+ 15,000
Coal and coke ...	272,000	256,000	+ 16,000	1,041,000	971,000	+ 70,000
Goods-train traffic ...	575,000	575,000	—	2,270,000	2,185,000	+ 85,000
Total receipts	810,000	813,000	— 3,000	3,255,000	3,156,000	+ 99,000
G.W.R. (3,750¼ mls.)						
Passenger-train traffic...	150,000	150,000	—	630,000	632,000	— 2,000
Merchandise, &c. ...	178,000	175,000	+ 3,000	691,000	691,000	—
Coal and coke ...	123,000	112,000	+ 11,000	484,000	438,000	+ 46,000
Goods-train traffic ...	301,000	287,000	+ 14,000	1,175,000	1,129,000	+ 46,000
Total receipts	451,000	437,000	+ 14,000	1,805,000	1,761,000	+ 44,000
S.R. (2,154 mls.)						
Passenger-train traffic...	234,000	228,000	+ 6,000	958,000	946,000	+ 12,000
Merchandise, &c. ...	56,000	59,500	— 3,500	213,500	222,500	— 9,000
Coal and coke ...	41,000	39,500	+ 1,500	152,500	139,500	+ 13,000
Goods-train traffic ...	97,000	99,000	— 2,000	366,000	362,000	+ 4,000
Total receipts	331,000	327,000	+ 4,000	1,324,000	1,308,000	+ 16,000
Liverpool Overhead ... (6½ mls.)	1,181	1,098	+ 83	4,804	4,408	+ 396
Mersey (4½ mls.) ...	4,166	4,088	+ 78	17,717	17,233	+ 484
*London Passenger Transport Board ...	531,600	514,400	+ 17,200	16,322,400	16,064,600	+ 257,800
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,739	1,845	— 106	7,020	7,293	— 273
,, ,, goods	435	470	— 35	1,556	1,584	— 28
,, ,, total	2,174	2,315	— 141	8,576	8,877	— 301
†Great Northern pass. (543 mls.)	7,050	7,000	+ 50	22,900	22,100	+ 800
,, ,, goods	9,250	9,250	—	28,800	27,800	+ 1,000
,, ,, total	16,300	16,250	+ 50	51,700	49,900	+ 1,800
†Great Southern pass. (2,076 mls.)	23,826	24,002	— 176	61,143	60,507	+ 636
,, ,, goods	37,889	41,111	— 3,222	115,179	125,659	— 10,480
,, ,, total	61,715	65,113	— 3,398	176,322	186,166	— 9,844

* 30th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes
† 3rd week

British and Irish Railways Stocks and Shares

Stocks	Highest 1935	Lowest 1935	Prices Jan. 29, 1936	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	44½	53½	+3
5% Con. Prefce. ...	124	108	121½	—
5% Red.Pref.(1950)	117	106¾	110½	—
4% Deb.	118½	108	115½	—
4½% Deb. ...	122	110	117½	—
4½% Deb. ...	129½	118	126½	—
5% Deb.	140¼	130	137½	—
2½% Deb.... ...	82¼	68½	76	—
5% Rt. Charge ...	137	128	134½	—
5% Cons. Guar. ...	136¾	120½	134½	—
L.M.S.R.				
Ord.	25 5/16	16	20½	+2
4% Prefce. (1923)	58¼	43½	62½	+6
4% Prefce. ...	87½	73½	87½	+3½
5% Red.Pref.(1955)	107	97¾	105½	+1
4% Deb.	110¼	99½	107½	−½
5% Red.Deb.(1952)	119 11/16	111 5/16	117½	—
4% Guar.... ...	105⅝	95½	104½	+ 1
L.N.E.R.				
5% Pref. Ord. ...	15⅞	8¼	11	+1
Def. Ord.	7 9/16	4¾	5⅞	+⅛
4% First Prefce....	74¾	48	63	+6
4% Second Prefce.	31⅜	16¼	23½	+3½
5% Red.Pref.(1955)	92¼	71	84½	+6
4% First Guar. ...	103 11/16	93	101½*	+1½
4% Second Guar.	98¾	82½	93½*	+1½
3% Deb.	86	75	82	—
4% Deb.	109¼	98½	106½	−1
5% Red.Deb.(1947)	118⅛	106½	115½	—
4½% Sinking Fund Red. Deb.	112½	108	110	—
SOUTHERN				
Pref. Ord.... ...	87½	69⅝	90	+3
Def. Ord. ...	25 13/16	16¾	23½	+1
5% Prefce. ...	124	108¼	122½	—
5% Red.Pref.(1964)	117¾	109½	115½	—
5% Guar. Prefce.	136½	121½	134½	—
5% Red.Guar.Pref. (1957)	121¼	112½	116½	—
4% Deb.... ...	116¾	107	115	—
5% Deb.	138	130¼	136½	—
4% Red. Deb. 1962–67	115	106½	115	—
BELFAST & C.D.				
Ord.	9	4	9	—
FORTH BRIDGE				
4% Deb.	111¼	104½	104½	—
4% Guar. ...	109⅞	104	104½	—
G. NORTHERN (IRELAND)				
Ord.	20	7	17	—
G. SOUTHERN (IRELAND)				
Ord.	57½	14½	41	—
Prefce.	50	25¼	50	−½
Guar.	88¾	51¼	90½	+2½
Deb.	86¼	70	90	+1
L.P.T.B.				
4½% "A" ...	130	119¾	127	—
5% "A" ...	139¾	130	136½	—
4½% "T.F.A." ...	113¾	108	110	—
5% "B" ...	131½	122¾	130½	—
"C"	109½	91	108½	−1
MERSEY				
Ord.	23⅛	9¼	28½	−1
4% Perp. Deb. ...	100½	93½	97½*	—
3% Perp. Deb. ...	75½	67	76*	—
3% Perp. Prefce.	62	47¼	66½	—

* ex dividend

CONTRACTS AND TENDERS

The L.N.E.R. has placed the following orders for a total of 160 passenger coaches to be constructed under the Government Guaranteed Loan :

Metropolitan-Cammell Carriage & Wagon Co. Ltd., 20 third class corridor brake vestibuled coaches, and 66 third-class vestibuled coaches.

Birmingham Railway Carriage & Wagon Co. Ltd., 19 third class corridor brake coaches and 36 third class vestibuled coaches.

Cravens Railway Carriage & Wagon Co. Ltd., 19 open third class vestibuled coaches.

Orders have also been placed under the normal L.N.E.R. rolling stock building programme for the current year for a total of 500 specially constructed wagons for container traffic divided as follow :

Metropolitan-Cammell Carriage & Wagon Co. Ltd., 200 wagons.

Birmingham Railway Carriage & Wagon Co., Ltd., 200 wagons.

Charles Roberts & Co. Ltd., 100 wagons.

The whole of the above orders aggregate over half a million pounds in value. Items covered by other contracts recently placed by the L.N.E.R. include 180,000 gallons of creosote oil for " pickling " sleepers ; 1,800 tons of steel fishplates in connection with permanent way renewal ; 1,256 pairs of carriage wheels and axles and 670 bogies for the new passenger coaches under construction in the company's works ; 4,000 pairs of wagon wheels and axles for the new freight vehicles now building ; and 1,800 tons of pig iron for use in the L.N.E.R. forges at Doncaster and Darlington.

Diesel Locomotive Orders

John Fowler & Co. (Leeds) Ltd., has received the following orders for diesel locomotives :—

One 42-b.h.p. diesel locomotive, type 0-4-0, 4 ft. 8½ in.-gauge, from the South Wales Transport Co. Ltd., for service on the Mumbles Railway, Swansea.

One 80-b.h.p. diesel locomotive, type 0-4-0, 4 ft. 8½ in-gauge, from the Associated Portland Cement Manufacturers Limited for work in their Dunstable Quarries ; this follows an order for two diesel locomotives, supplied to this firm nine months ago, for work at their quarries at Harbury, near Leamington.

Three 40-b.h.p. diesel locomotives, type 0-4-0, 2 ft.-gauge, from the South Essex Waterworks Company, for use in connection with the construction of a new reservoir near Colchester.

One 30-b.h.p. diesel locomotive from the Natal Estates Limited, South Africa, of similar type and size to one supplied early last year.

All the above locomotives will be powered with Fowler-Sanders vertical heavy-duty type compression-ignition engines.

Stewarts and Lloyds Limited has received an order from the Buenos Ayres Great Southern Railway for 3,350 solid drawn black steel boiler and superheater smoke tubes.

Important L.N.E.R. Improvements at Nottingham

The L.N.E.R. has decided to recondition and modernise the locomotive depot at Colwick, Nottingham. The cost will be £35,000. This depot, which is one of the most important in the Midlands, has 167 locomotives under its care which consume over 100,000 tons of coal annually. To facilitate the coaling of engines a modern bunker type coaling plant of 500 tons capacity, together with the necessary sidings for full and empty wagons, is to be installed. A new power-operated turntable of 70 ft. diam. is to take the place of one of the existing turntables, the other of which will be retained. New water columns, a new wet ash pit 260 ft. in length, together with ten travelling cages and a three-ton steam-operated grab crane for clearing the pit, and a modern oil store with seven automatic issuing pumps are provided for in the scheme. Nor has the comfort of the staff been overlooked ; a new mess room and a new foreman's office are included in the reconditioning plans.

Loudon Brothers Limited has received an order from the Cordoba Central Railway for one heavy duty locomotive wheel lathe.

Arthur Smart & Sons Limited has received an order from the Egyptian State Railways Administration for 360 metric tons of coloured cotton waste at a total price of £4,680, delivered f.o.b. Manchester.

Bayliss, Jones & Bayliss Limited has received an order from the Cordoba Central Railway for 13,000 steel fish-bolts and nuts for 70-lb. rails.

Railway Orders in United States

Numerous orders for railway equipment have recently been placed, reports Reuters Trade Service from New York, thus carrying on one of the busiest periods in the railway construction field that has occurred for a long while. The Seaboard Air Line has ordered one shunting locomotive and six locomotive tenders from the Baldwin Locomotive Works, according to the *Railway Age* ; the Burlington is building three locomotives at its own shops, and the National Railways of Mexico are inquiring for four or five engines.

The Bessemer and Lake Erie and Union Railroads, which recently announced their intention of buying equipment, have now come into the market for 10 locomotives, 14 steam shunting engines, and one diesel-electric shunting engine : inquiries for 2,000 hopper and 1,000 gondola cars have also been issued. The New York, New Haven & Hartford Railroad has ordered five diesel-electric shunting engines from the Cooper-Bessemer Corporation and five from the Ingersoll-Rand Company.

P. & W. MacLellan Limited has received an order from the Cordoba Central Railway for 370 mild steel plates required for the construction of ten petroleum travelling tanks.

Leyland Motors Limited has received the following orders from railway and railway-associated road transport operators :

Northern Ireland Road Transport Board, 20 single-decked Lion and 15 double-decked oil-engined Titan buses.

Scottish Motor Traction Co. Ltd., six oil-engined Tiger vehicles.

London Passenger Transport Board, eight Cub vehicles.

New South Wales Department of Road Transport, Australia, two Titan vehicles.

Geo. Spencer, Moulton & Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for 6,470 patent indiarubber concentric springs.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, invites tenders receivable by February 18, for one 2-ft-gauge steam locomotive required to haul firewood and timber in the Changa Manga Plantation.

The Chief Controller of Stores, Indian Stores Department (Miscellaneous Section), New Delhi, invites tenders receivable by February 24, for the supply of rubber and metallic vacuum brake fittings on a running contract basis during the period June 1, 1936, to May 31, 1937.

Forthcoming Events

Jan. 31 (*Fri.*)—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 7 p.m. " Service Maintenance of High Speed Internal Combustion Engines for Transport and Power," by Mr. E. Ottaway.

Feb. 3 (*Mon.*).—G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. "Flower and Vegetable Gardening," by Mr. E. Dore.

Society of Engineers, at Geological Society, Burlington House, Piccadilly, London, W.1, 6 p.m. Presidential Address by Mr. N. Hoskins.

Feb. 4 (*Tues.*).—Institute of Transport (Bristol), at the University, 5.40 p.m. Visit of the President.

Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. " The Institute Austrian Tour, 1935," by Mr. E. Brant.

L.N.E.R. (Middlesbrough) Lecture and Debating Society, at Cleveland Scientific Inst., Corporation Road, 7.15 p.m. " Tendencies in Modern Journalism," by Mr. W. Whillis.

L.N.E.R. (Newcastle-Sunderland) Lecture and Debating Society, at Newcastle, 7 p.m. " Power and Progress in Railway Areas at Hull, &c.," by Mr. J. Ellett.

Feb. 6 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, 5.45 p.m. " Some Features of the Steam Locomotive," by Mr. H. Johnson.

Southern Railway (London) Lecture and Debating Society, at Chapter House, St. Thomas' Street, S.E.1, 5.45 p.m. " Modern Rolling Stock," by Mr. L. Lynes.

Feb. 7 (*Fri.*).—Institute of Transport (Leeds), at Town Hall, 6.30 p.m. " Transport in China, Ancient and Modern," by Mr. C. Mayo.

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The Application of Commercial Salesmanship to Transport

Mr. H. W. Payne, Principal Assistant to the Chief Goods Manager, G.W.R., read a paper with the above title at a recent meeting of the Bristol Section of the Institute of Transport.

The price of transport was, in Mr. Payne's opinion, the most powerful factor in securing patronage in ninety-nine cases out of a hundred. He considered that the figures "7s. 6d." displayed in large type on an excursion bill were more compelling than the name of the destination, or the devices used by the artist in representing its attractions. Price was similarly important with respect to the carriage of goods, and sellers of transport should themselves recognise and impress upon their customers, that, as in all other commercial transactions, the price of moving merchandise was influenced by the quality of service provided. The cheaper it became, the greater was the liability to failure, damage to property, and inability to compensate appropriately.

The seller of railway goods transport was hampered in bargaining by the restrictions upon his system of charges, but he could justify his prices by emphasising the quality of service they commanded. One factor which would appeal to large industrial organisations with a strictly timetabled output was the regularity of the railway's daily collection, delivery, and transport programme. The same argument was one which could profitably be put forward in favour of rail-connected factory sites.

Mr. Payne saw in agreed charges a principle capable of expansion with benefit to both haulier and trader. Its great merit was that it fixed the preponderating element in any transaction of selling transport—the price—and did so at a level based upon the best quality of service for common use. Personal relationship was important as a means of maintaining custom, and in view thereof the psychological value of prompt settlement of reasonable demands for compensation should not be under-estimated.

Of co-ordination with road services—a term described by Mr. Payne as one with much meaning in intention and little final result in practice—it should be recognised that, even after agreements of this kind which were "co-ordinating" in more than name had been arrived at with large undertakings, there would remain a fruitful source of differences in the great body of private hauliers, and the many business organisations with their own transport facilities. In its full perfection, co-ordination would mean the end of the need for transport salesmanship. For his own part, Mr. Payne did not consider that the transport of this country would suffer from sane and healthy rivalry, and he considered that the principles of co-ordination should be allied with a spirit of co-operation between the various transport services in giving the nation of their best.

Railways and Economic Development

At the meeting of the G.W.R. Lecture and Debating Society at Paddington station on January 23, Mr. H. Marsh, of the Stores Department, Swindon, read his prize essay on the subject: "The Great Western Railway as an index of national economic development throughout the century of its existence." There was a good attendance of members, presided over by Mr. A. C. Cookson (Stores Superintendent).

Mr. Marsh began his paper with the observation that the early policy of British railways was directed to the attraction of passenger rather than merchandise traffic, and partly at least to this fact he attributed the gradual rather than rapid growth of trade following their inception. The building of railways was, however, in itself a great help to certain industries, and the stimulus came at a time when it was invaluable from the national point of view.

By the early 'fifties the railways began to exert a more definite effect on the national economic structure. More than any other factor they fostered the expansion of the industrial revolution. Ease and speed of transport of goods between ports and manufacturing towns and markets all over the country became available for the first time.

The decade from 1860 to 1870 was one of great economic progress, and this was reflected in the fact that in this period Great Western Railway receipts more than doubled.

Mr. Marsh discussed the effect of transport facilities on population, which in England and Wales increased from 14 to 20 millions between 1841 and 1861. The railways had played a big part in the distribution of population. The great impetus to the development of the West Country as a holiday centre and in agriculture and industry which the Great Western Railway provided was also referred to.

Dates and events significant in Great Western history were outlined in their economic setting, and the huge development of the importation of foodstuffs and the export of manufactures was discussed, particularly in relation to home agriculture.

After making reference to national industrial growth from the opening of the twentieth century to the outbreak of the war, Mr. Marsh outlined the period of Government control and the subsequent amalgamation of railways. Finally, he briefly considered the present economic position which, he thought, justifies reasonable hopefulness. Although setbacks will be experienced, the productive powers of society are augmenting at such a pace that a decay of general prosperity need not be apprehended.

NETHERLANDS RAILWAYS EXPENDITURE.—We regret that in the Overseas columns of our issue of January 10, a printer's error occurred in the insertion of £ marks over the columns in the table of expenses under the heading "Holland." The figures were in florins.

BRITISH STANDARD ELECTRODES.—The British Standards Institution has issued two specifications for electrodes, one relating to bare wire and the other to covered electrodes, providing for electrodes suitable for welding wrought iron or mild steel not exceeding 33 tons per sq. in., and in each specification there is a range of grades appropriate to the class of work to be carried out. Copies of these two new B.S. Specifications, Nos. 639—1935 (Covered Electrodes) and 640—1935 (Bare Rod or Wire Electrodes) can be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. 2d. each, post free.

Railway Share Market

The accumulation of week-end orders induced a strong tone in most sections of the Stock Exchange on Monday. Markets were of course closed on Tuesday. When business recommenced on Wednesday there was a moderate falling off in the volume of business reported, but a very firm undertone was maintained. Home railway stocks failed to keep best prices, but it is hardly surprising there was a certain amount of profit-taking after the satisfactory improvement shown towards the end of last week and on Monday.

Conflicting views are current in the market as to the prospective benefits likely to be derived from the rating decision, but it is generally agreed that it will facilitate restoration of the balance of the 1931 "wages cuts" and this in itself is regarded as a "bull" point in the market as it would improve the outlook by removing any possibility of labour troubles. Most stocks show an improvement of around a point as compared with a week ago. Great Western ordinary was assisted by attention drawn to the yield and by growing hopes that a 3 per cent. dividend will again be forthcoming for the year. Southern preferred also benefited from market dividend estimates, while the deferred were also more active. L.N.E.R. first preference received a good deal of attention, partly because it is contended that the railway's outlook is assisted perhaps more than any other from the removal of the danger of a coal strike. Metropolitan was prominently strong, and both the 4 per cent. preference and 1923 preference of the L.M. & S.R. held the greater part of their improvement. The debentures have also made better prices on balance. L.N.E.R. 4 per cent. first guaranteed and 4 per cent. second guaranteed stocks are fully a point higher on the week. London Transport "C" remained dull, despite satisfaction with the traffic return. Foreign railway stocks were irregular with some profit taking in those of the Argentine railway companies, although there are continued hopes of new exchange remittance arrangements arising from a renewal of the Anglo-Argentine trade agreement.

The demand for Cordoba Central debentures has been accompanied by another revival of rumours of a Government offer for the line. Elsewhere Leopoldina issues responded further to the rates increase granted to the company, while the debentures have gained nearly four points to 56 at the time of writing. San Paulo ordinary and debentures have also put on several points. Antofagasta preference and ordinary were in good demand. Canadian Pacific were purchased on hopes of steady increase in grain traffic as time proceeds, and the preference also improved fractionally. Elsewhere Union Pacific moved in favour of holders.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1935-36	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1935	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1935	Prices: Lowest 1935	Prices: Jan. 29, 1936	Yield% (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	26.1.36	14,470	+ 2,080	4	55,480	41,050	+ 14,630	Ord. Stk.	23	14 15/16	24 1/2	Nil
	Argentine North Eastern	753	25.1.36	6,328	— 11	30	236,399	219,879	+ 16,520	"	7	4	7	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	49 1/2	30	47 1/2	8 7/16
	Bolivar	174	Dec., 1935	4,700	— 1,000	52	71,300	71,400	— 100	6 p.c. Deb.	13	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	14	11	14	3 9/16
	Buenos Ayres & Pacific	2,806	25.1.36	92,891	+ 14,610	30	2,299,103	2,075,874	+ 223,229	Ord. Stk.	10 1/2	4 7/8	11	Nil
	Buenos Ayres Central	190	11.1.36	$91,800	+ $13,200	28	$3,347,600	$3,279,700	+ $67,900	Mt. Deb.	21	10	14	Nil
	Buenos Ayres Gt. Southern	5,085	25.1.36	151,704	— 35,171	30	3,684,449	3,857,728	— 173,279	Ord. Stk.	27	13 1/2	22 1/2	Nil
	Buenos Ayres Western	1,930	25.1.36	50,646	+ 1,205	30	1,267,482	1,260,741	+ 6,741	"	24	10	18	Nil
	Central Argentine	3,700	25.1.36	136,566	— 241	30	3,578,556	3,488,446	+ 90,110	"	17 7/8	7	14	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9	3 1/4	6 1/2	Nil
	Cent. Uruguay of M. Video	273	18.1.36	12,801	+ 2,434	29	298,339	444,577	— 146,238	Ord. Stk.	8 1/2	3	6	Nil
	Do. Eastern Extn.	311	18.1.36	2,319	+ 445	29	50,081	53,135	— 3,054	—	—	—	—	—
	Do. Northern Extn.	185	18.1.36	1,986	+ 1,026	29	36,234	28,683	+ 7,551	—	—	—	—	—
	Do. Western Extn.	211	18.1.36	978	+ 87	29	22,724	22,273	+ 451	—	—	—	—	—
	Cordoba Central	1,218	25.1.36	25,560	— 2,100	30	884,090	885,620	— 1,530	Ord. Inc.	4	1	3	Nil
	Costa Rica	188	Nov., 1935	13,350	— 4,170	22	68,699	81,005	— 12,306	Stk.	35	30	34	5 7/8
	Dorada	70	Dec., 1935	14,000	+ 5,900	52	144,700	120,900	+ 23,800	1 Mt. Db.	103 5/8	102 1/2	102 1/2	5 7/8
	Entre Rios	810	25.1.36	9,894	— 6,015	30	337,672	376,262	— 38,590	Ord. Stk.	15	6 1/2	12	Nil
	Great Western of Brazil	1,082	25.1.36	10,800	— 700	4	37,100	41,000	— 3,900	Ord. Sh.	1/2	5/16	5/8	Nil
	International of Cl. Amer.	794	Dec., 1935	$458,840	+ $47,975	52	$4,717,930	$4,722,778	— $4,848	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1/2	5/32	1/2	Nil
	La Guaira & Caracas	22 1/4	Dec., 1935	4,200	+ 1,000	52	45,345	42,350	+ 2,995	Stk.	8 1/2	8	8 1/2	Nil
	Leopoldina	1,918	25.1.36	18,767	+ 850	4	67,534	67,436	+ 98	Ord. Stk.	8 1/2	2 1/2	9 1/2	Nil
	Mexican	483	21.1.36	$241,100	— $13,900	3	$698,200	$671,400	+ $26,800	"	1 1/2	1/4	3/4	Nil
	Midland of Uruguay	319	Dec., 1935	7,995	— 5,513	26	38,696	65,833	— 27,137	"	1 1/2	1 1/2	1 1/2	Nil
	Nitrate	401	15.1.36	9,951	+ 5,251	2	9,951	4,700	+ 5,251	Ord. Sh.	64/-	42/-	23/4	Nil
	Paraguay Central	274	25.1.36	$2,179,000	+ $1,053,000	30	$62,395,000	$30,021,000	+ $32,374,000	Pr. Li. Stk.	80 1/2	60	76 1/2	7 15/16
	Peruvian Corporation	1,059	Dec., 1935	78,507	+ 16,529	26	454,297	371,516	+ 82,781	Pref.	10 5/8	6 7/16	10	Nil
	Salvador	100	18.1.36	c35,750	+ c3,250	29	c447,446	c425,652	+ c21,794	Pr. Li.Db.	65	61	65	7 11/16
	San Paulo	1531/2	19.1.36	26,032	+ 4,741	3	75,538	61,231	+ 14,307	Ord. Stk.	80	35	63	3 15/16
	Taltal	164	Dec., 1935	4,055	+ 1,915	26	20,700	13,570	+ 7,130	Ord. Sh.	1 11/16	1 1/8	1 5/8	7 1/4
	United of Havana	1,353	18.1.36	18,132	+ 1,963	29	448,709	467,383	— 18,674	Ord. Stk.	3 1/16	1	3	Nil
	Uruguay Northern	73	Dec., 1935	1,086	— 442	26	4,719	7,294	— 2,575	Deb. Stk.	4 1/2	2 15/16	4 1/2	Nil
Canada.	Canadian National	23,684	21.1.36	584,639	+ 35,049	3	1,708,043	1,583,644	+ 124,399	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	78 1/8	52 1/2	64 1/2	6 5/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	103 5/8	93	102 1/2	3 7/8
	Canadian Pacific	17,224	21.1.36	433,600	+ 42,600	3	1,244,200	1,147,200	+ 97,000	Ord. Stk.	14 1/16	8 3/4	12 1/2	Nil
India.†	Assam Bengal	1,329	31.12.35	35,497	— 4,564	39	933,034	1,060,251	— 127,217	Ord. Stk.	92 1/8	77 1/2	82 1/2	3 5/8
	Barsi Light	202	31.12.35	4,672	+ 1,065	39	105,847	106,882	— 1,035	Ord. Sh.	105	77 1/2	77 1/2	6 7/16
	Bengal & North Western	2,112	10.1.36	77,538	+ 4,669	41	699,713	698,432	+ 1,281	Ord. Stk.	30 1/2	29 1/2	29 6/12	5 1/8
	Bengal Dooars & Extension	161	31.12.35	3,489	— 1,025	39	106,228	119,131	— 12,903	"	127 1/2	122	123 1/2	5 11/16
	Bengal-Nagpur	3,268	10.12.35	154,050	— 8,642	36	4,356,761	4,011,045	+ 345,716	"	105	100 5/16	101 1/2	3 15/16
	Bombay, Baroda & Cl. India	3,072	20.1.36	249,150	— 24,750	42	6,464,700	6,521,700	— 57,000	"	115 1/4	110	110 1/2	5 7/16
	Madras & Southern Mahratta	3,230	31.12.35	177,825	+ 7,900	39	3,967,722	4,199,345	— 231,623	"	128 1/2	113 7/8	115 1/2	7 1/4
	Rohilkund & Kumaon	572	10.1.36	17,151	+ 384	41	131,630	135,464	— 3,834	"	294	262	288 1/2	5 3/16
	South India	2,526	20.12.35	99,943	— 11,926	38	2,843,121	2,999,850	— 156,729	"	119 3/4	104 1/4	105 1/2	7 1/8
Various.	Beira-Umtali	204	Nov., 1935	64,179	— 176	9	129,926	125,490	+ 4,436	—	—	—	—	—
	Bilbao River & Cantabrian	15	Dec., 1935	1,516	— 98	52	18,469	19,947	— 1,478	—	—	—	—	—
	Egyptian Delta	622	31.12.35	8,395	+ 1,218	39	189,824	180,254	+ 9,570	Prf. Sh.	2	1 5/8	1 5/4	5 11/16
	Great Southern of Spain	104	18.1.36	1,189	— 1,165	3	3,207	6,748	— 3,541	Inc. Deb.	3 1/2	2	3 1/2	Nil
	Kenya & Uganda	1,625	Nov., 1935	182,196	+ 11,855	48	2,184,339	2,030,213	+ 154,126	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48	36	50	7
	Mashonaland	913	Nov., 1935	101,719	— 13,519	9	213,702	232,511	— 18,809	1 Mg. Db.	104 1/4	100	102 1/2	4 7/8
	Midland of W. Australia	277	Nov., 1935	14,519	— 556	22	68,781	71,429	— 2,648	Inc. Deb.	98 3/4	93	92 1/2	5 7/8
	Nigerian	1,905	14.12.35	73,308	+ 9,502	37	1,191,394	1,286,098	— 94,704	—	—	—	—	—
	Rhodesia	1,538	Nov., 1935	187,828	+ 2,351	9	390,522	375,036	+ 15,486	4 p.c. Db.	105 1/2	101	104	3 7/8
	South African	13,246	4.1.36	539,381	+ 47,254	40	22,703,973	20,489,826	+ 2,214,147	—	—	—	—	—
	Victoria	4,728	Sept., 1935	789,330	+ 82,793	13	2,238,853	2,139,677	+ 99,176	—	—	—	—	—
	Zafra & Huelva	112	Nov., 1935	9,907	— 1,655	48	124,030	127,888	— 3,858	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value